DISTANCE LEARNING MIGRANT EDUCATION PROGRAM

GRADES 5-6

2014 GUIDE FOR TEACHERS

ESC 20 Serving the Educational Community

TEA Texas Education Agency

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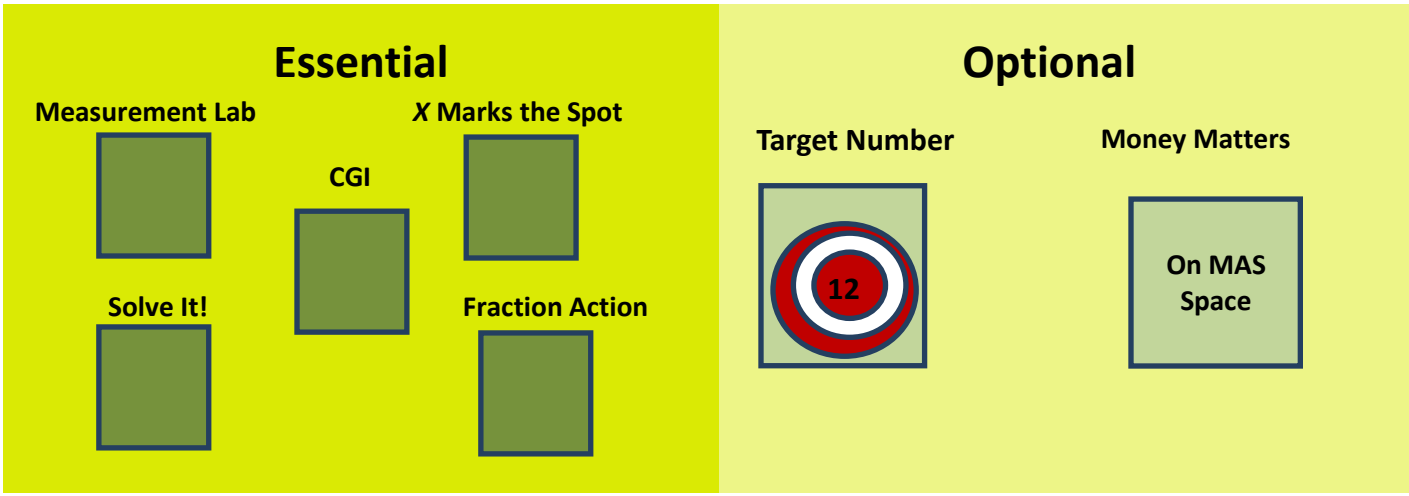


5th and 6th Grade Band Daily Routines Introduction

Fifth and sixth grade students will begin most days with these Daily Routine Activities. Unlike the primary grades that come to the Daily Routine Board for the tasks, students in the upper grades may sit in their seats. In fact, with the group work expected in the activities, desk work is probably more appropriate. The graphic above demonstrates a simple permanent display. You may, however, display the activities any way you wish. Suggested times for each activity are provided in the materials below. These are merely suggestions; however, blackline masters are provided as noted in the materials list.

The Daily Routines explained in this section are the base activities for every lesson of every unit. Specific materials for activities that change such as the Measurement Lab, CGI, or the Graphing Activity will be noted in the curriculum for that particular lesson.

Language Objectives for Daily Routines

- Speak to partners, teacher, and class using vocabulary introduced in the Daily Routines.
- Listen to, read, speak, and write the labels of the graph using Interactive Writing.
- Discuss problem solving strategies in partners, small groups, and whole groups.
- Listen to, read, speak, and write to understand action in word problems.

Math Objectives for Daily Routines

- Find, complete, and create patterns.
- Solve word problems using a variety of strategies and defend their strategies.
- Compose and decompose values to show a new representation of the value.
- Use place value to group tens and ones.
- Construct concrete models of fractions.
- Compare fractional parts of a whole and sets in a problem situation using concrete models.
- Generate equivalent fractions.
- Model fraction quantities greater than one.
- Relate decimals to fractions that name tenths and hundredths.
- Measure to compare up to three items' length, weight, capacity, and area.
- Generate picture and bar graphs from experiences in the classroom.

5th – 6th Daily Routines Materials List per Activity

Essential:

- **Measurement Lab**
- **Solve It!** (15 minutes)
    - BLM Poster of Activity
    - Grade-Band Problems
    - See a full separate section in Teachers Manual of instructions for this activity
- **Fraction Action** (2 minutes)
    - BLM Poster of Activity
    - Problems are suggested in the main curriculum
- **X Marks the Spot** (2 minutes)
    - BLM Poster of Activity
- **CGI** (10 minutes)
    - BLM Poster of Activity
    - Problems are suggested in the main curriculum

Optional:

- **Target Number** (4 minutes)
    - BLM (blackline master) Poster of Activity
    - Target numbers are provided in the main curriculum
- **Money Matters** (Available online in MAS Space)

ESSENTIAL Daily Routines

CGI Problems

One CGI problem per day.

There are 11 CGI problems written for each Unit. It will be the teacher's choice as to which problems to use on a daily basis. Numbers have been left out so that you can provide quantities that are reasonable for your students' abilities. Difficulty increases from Result Unknown to Start Unknown of each type; however, when students see the action in the problems and use manipulatives to physically act out the problem, all levels are attainable with even the youngest of children.

Using CGI with your students:

Read the word problem to the students. (For older students, have a copy for them to read.)

Ask students to solve the problem and to show their work on paper or to use manipulatives/counters.

As students are working, go around the room. Ask individual students to explain their strategy to you.

This allows several more students than usual to have your attention and, what the researchers discovered, gives you more insight into how the students are thinking. Students who are struggling will also have a chance to overhear some strategies that might make sense to them.

When students are done, ask for a volunteer to demonstrate and explain their strategy to the class. Ask for one or two more volunteers who have a DIFFERENT strategy, as this helps students understand that there is more than one way to get to the correct answer. In addition, students become more comfortable with how to give an explanation, as well as helping their fellow students understand the math involved. When students share their solutions, encourage participation by calling on someone else to explain that student's strategy. It is also important to look for and point out connections between the strategies shared.

It does take a lot of time to cover one problem, but it gives students the time they need for *learning*, instead of just "covering" the concept.

Options:

- There is a CGI graphic organizer that you can use.
- If some students finish early, ask them to solve the problem again, but with a different set of numbers.
- The curriculum provides three sets of numbers for each problem.
- Write/scribe a student's explanation for the class to see.
- Use this with your word wall. Hang a 12" x 18" piece of construction paper on the board. Ask the student to write their strategy on the paper instead of on the board. If the K-1 student uses counting as their strategy, this can be attached to their vocabulary word, "count," on the word wall. (If the student demonstrates with manipulatives, the teacher can draw the representation on the paper.)

CGI - continued

When you and the students are comfortable with the process, you can start asking the students questions, based on situations you encounter with your group. For example: "Did you see any strategies for adding four groups of six that you would like to try the next time you have a problem like that?" ~or~ Draw a straight line of 23 circles, then draw four groups of six and ask the students, "Which has 24?" "Which is easier to check?" "Why?"

Problem Type

Join:

- **Result Unknown:** These are the typical problems students are used to seeing in curriculum resources. Anna had 5 marbles. Marcos gave her 3 more. How many marbles did Anna have then?
- **Change Unknown:** These are the typical "missing addend" problems. Anna had 5 marbles. How many marbles did she need to have 8 marbles?
- ***Start Unknown:*** *These are the typical "work backward" problems. Anna had some marbles. Marcos gave her 3 more. Then she had 8 marbles. How many marbles did Anna have to begin with?*

Separate:

- **Result Unknown:** Typical "take away" problems. Anna had 8 marbles. She gave 3 to Marcos. How many marbles did she have then?
- **Change Unknown:** Anna had 8 marbles. She gave some to Marcos. Then she had 3 marbles. How many marbles did she give to Juan?
- ***Start Unknown:*** *Typical "work backwards." Anna had some marbles. She gave 5 to Marcos. Then she had 3 marbles. How many marbles did Anna have in the beginning?*

Part-Part-Whole:

- **Whole Unknown:** These are addition problems of items in a set. Anna had 5 green marbles and 3 blue marbles. How many marbles did she have?
- **Part Unknown:** These are subtraction problems of items in a set. Anna had 8 marbles. 5 of them were green. How many were NOT green?

Compare:

- **Difference Unknown:** These are the typical comparison problems. Anna had 8 marbles. Marcos had 5 marbles. How many more marbles did Anna have?
- **Compare Quantity Unknown:** These comparison problems are a little more challenging in the verbiage. The action is actually counting on. Marcos had 5 marbles. Anna had 3 more marbles than Marcos. How many marbles did Anna have?
- ***Referent Unknown:*** *Again, challenging problems because of the verbiage, these problems are actually counting back. Anna had 8 marbles. She had 5 more marbles than Marcos. How many marbles did Marcos have?*

Grouping / Partitioning:

- **Multiplication:** These problems are straight forward multiplication word problems.
- **Measurement Division:** Students are asked to divide, but the visualization is different from what they are used to reading in text books which traditionally tell you how many sets there are, and want to know how many of each there will be in a set. In measurement division, students know how many are in a set, but need to determine the

CGI - continued

- number of sets there will be. EX. You have 35 widgets and want to package them 7 to a package. How many packages will you make?
- **Partitive or Divvy Out Division:** Students divide to find the number of items per set. EX: There are 35 widgets to be packaged in 7 packages. How many widgets will there be in each package?

Rate:

- **Multiplication:** Students multiply a smaller rate to find a larger proportional rate.
- **Measurement Division:** Students know the numerator, but need to find the denominator of the ratio. EX: It took Carl 18 hours to drive 1200 miles. At that rate, how long did it take him to drive 100 miles?
- **Partitive or Divvy Out Division:** Students know the denominator, but need to find the numerator of the ratio. EX. It took Carl 18 hours to drive 1200 miles. At that rate, how many miles did he travel in 6 hours?

Price:

- **Multiplication:** Students multiply a smaller price to find a larger proportional rate.
- **Measurement Division:** Students know the total cost and the unit rate, but want to determine the number of items for the total cost. EX Ingrid spent a total of $162 on books for her drama class. If each book cost $4.00, how many books did she buy?
- **Partitive or Divvy Out Division:** Students know the total cost and the total number of items purchased, but want to know the unit price. EX Ingrid spent a total of $162 on books for her drama class which cost $4.00 each. How many books did she buy?

FRACTION ACTION

This area is designed for the students to practice basic fraction skills. You will find the daily tasks in the overview of the Daily Routine in the main curriculum.

MEASUREMENT

Measurement and Estimate are life skills which are poorly addressed in our society. Although there will not be a measurement activity for every lesson, certainly there will be many throughout the summer program. These will all be drawn from the mathematics and literature connection. Each lesson will have a list of materials needed within the main curriculum; however, there will be an assortment of generic materials needed throughout the summer:

- **Color tiles** (12 per student)
- **Metric/Customary Rulers** (to the inch – one per student)
- **Customary Measurement Cups** (one per two students)

X MARKS THE SPOT!

This activity focuses on the variable *x* and how to solve simple equations. You will find the tasks for each day within the appropriate lesson.

(Essential Daily Routines continue)
SOLVE IT! for 3-4 and 5-6 (solve 2- and 3-step problems)

Being able to solve multi-step problems is a real-life skill. After all, most problems that we face day-to-day in our living involve having to solve several smaller problems before we arrive at the solution for the big one facing us.

In our STAAR Performance section this summer, we'll be working in small groups to recognize multi-step problems, solve and check each to make sure our solutions are accurate, and then use that information to solve the bigger problem.

The Set Up

- The class is divided appropriately into small groups for each lesson's problem according to the number of steps in solving the problem.
- 2-step problems are worked with a partner; 3-step problems are worked in a group of three or triad.
- There are three problems per unit, one to be given with each Lesson.
- The chart below shows you the number of steps to a solution for each grade band, and what the teaming structure is for each lesson's problem.

Units	Grade Band 1-2 OPTIONAL for 1-2	Grade Bands 3-4, 5-6, 7-8
1	2-step, all 3 lesson pairs	2-step, all 3 lesson pairs
2	2-step, all 3 lesson pairs	2-step, all 3 lesson pairs
3	2-step, all 3 lesson pairs	3-step, triad, triad, pairs
4	2-step, pair, pair, independent	3-step, pair, pair, independent
5	2-step, pair, pair, independent	3-step, pair, pair, independent
6	2-step, all lessons independent	2, 3-step, all lessons independent

Solve It! - The Rationale

The difficulty in solving multi-step problems is usually not the arithmetic; the difficulty is with the words and how they flow together to make a story. Once students understand that there is a series of actions taking place, each adding its own significance to the final solution, students will find the process much less daunting.

It's like the old elephant joke – Question: How do you eat an elephant? Answer: One bite at a time. So let's teach students to first recognize the "elephant" as needing more than one step to solve; then show them how taking the problem "one bite at a time" will get them to their final goal.

Each of the three lessons per unit has a very distinct approach. We'll look at those approaches in our next section.

Solve It! continued

Varied Approaches of the Three Lessons

Set 1, Lesson 1 is a set of related problems (Units 1, 2, 3). *Subsequent solutions are dependent upon preceding answers.*

- Students work in teams composed of the same number of students as there are related problems; i.e., two related problems are solved in pairs, three related problems in groups of three or triad.
- All students are given the same set of problems. Each student signs his or her name at the top of the page.
- Work the first problem, and then rotate the problem page to the person on your left (clockwise).
- Look at the sheet you have been handed. Is the strategy the same or different from your strategy? Verify, or check the answer, even if the answer is the same as the one you calculated. Remember, errors do happen.
- Use the verified answer to solve Problem #2.
- Rotate the problem page to the person on your left and repeat the process.
- When all problems have been solved, rotate the problem sheet back to the person whose name is at the top of the problem sheet. Verify the final answer.

Now, discuss in your small groups the different strategies used to solve the problem.

- How are they different?
- How are they alike?
- Did you see a strategy that you had never thought to use? Explain how and why it worked.
- Did you see a strategy that you would like to have explained? Ask the person to explain it.

Set 2, Lesson 2 is a multi-step problem which needs pulling apart. **(Units 1, 2, 3)**

Students work in teams composed of the same number of students as there are steps in the problem; i.e., 2-step problems are solved in partners, 3-step problems in groups of three and so on.

- All students are given the same set of problems. Sign your name at the top of the page.
- Work as a group to break the problem apart into the smaller problems. What do you need to solve for each step of the problem? Send problem page back to the person whose name is at the top of the problem sheet. Verify the final answer.

Now, discuss in your small groups the different strategies used to solve the problem.

- How are they different?
- How are they alike?
- Did you see a strategy that you had never thought to use? Explain how and why it worked.

Solve It! continued

- Did you see a strategy that you would like to have explained? Ask the person to explain it.

Set 3, Lesson 3 is a multi-step problem which needs pulling apart. **(**All problems worked in Pairs for Lesson 3, Units 1, 2, 3; and Lessons 1 & 2, Units 4 & 5)

Students work in partners to solve the problem. There are two problems this time, one for each partner.

- Solve your own multi-step problem. Trade papers with your partner and check your partner's solution to a different problem.

Now, discuss the different strategies used to solve the problems.

- How are they different?
- How are they alike?
- Did you see a strategy that you had never thought to use? Explain how and why it worked.
- Did you see a strategy that you would like to have explained? Ask the person to explain it.

Independent Problem Solving (Lesson 3, Units 4 & 5, all Lessons Unit 6)

Naturally, the goal is for students to be independent problem solvers. Once students have practiced in small groups, it's time to see what they can do individually. These problems are great assessments for you as their Teacher. Everyone in the room has the same problem, but works independently to solve it. Once the problems are finished, it's time to discuss in large group:

- How did you solve the problem?
- Did someone solve it a different way?
- How are the strategies alike? How are they different?
- Did you see a strategy that you had never thought to use? Explain how and why it worked.
- Did you see a strategy that you would like to have explained? Ask the person to explain it.

OPTIONAL Daily Routine Activities

TARGET NUMBER

Every day there is a target number suggested in the overview of Daily Routines in the main curriculum. Simply hide this number from the students until you are ready to time them. Tell them that they have one minute (or 30 seconds, whatever you have) to represent the number in as many ways as possible. On your count, show the number and begin timing. When you call time, everyone must stop writing. They then group into threes or fours to share their representations with one another (give them about one minute to do that). They select one or two unusual representations to share with the class. Have the students share orally, explaining the representation if necessary; or if you are pushed for time, have all write them on the board and use a gallery walk to explore them.

You will see new and different representations as your students grow in their understandings of quantity in number.

GRAPHING

You will have a graphing activity suggested every day based on the curriculum needs for the day, usually drawn from the language lesson. The TV Math Lesson often uses the results from the graph as a springboard, so please don't skip it.

The first graph you will want to generate, however, is a birthday graph. If your students are able to create their own class graph (first a real graph, then a bar graph made from those results), please do so. Otherwise, help students generate the graph by giving them a sticky note with their birthday/year and name on it, then making a horizontal bar graph. You many need to help them find the months. You are simply graphing the months of the year (not the days within the months).

Questions to Ask

- ***First allow students to tell you what they notice about the graph.*** They will probably see the months that have many birthdays, and the months that have fewer. Let them use their observation skills first.
- ***How many students have birthdays in the month of (month)?***
- ***How do you know?*** (the graph has that many sticky notes in the (month) column)
- ***Which month has the greatest number of birthdays? How do you know?***
- ***Which month has the fewest number of birthdays? How do you know?***
- ***How many more birthdays does (month) have than (month)?*** (Show students how to compare the rows.)
- ***How many fewer birthdays does (month) have than (month)?***
- ***If you had a choice of the month to be born, which month would it be and why?***

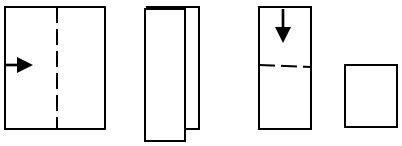
Optional Daily Routines continued
WHAT'S MISSING?
Students use what they know about related addition and subtraction to discover the missing number needed in the box to make the number sentence a true statement.

Materials:
- Unknown Quantity Flash Cards (any flash cards with a symbol in the number sentence representing number – referred to as "What's Missing? cards in the directions – all operations)
- Individual answer boards or one piece of plain white paper per student
- Dark crayons and an old sock if using the white boards

Unit 1 – **Addition and Subtraction**

Procedure:
- Shuffle the What's Missing? Cards and lay face down in front of you.
- Ask students to fold a piece of paper into fourths.

(Fold across portrait, fold down portrait so they have a sturdy display paper 1/4 the size of the paper. Students use the front and back, then open the last fold, and fold back to expose two new sides.)



- Draw one card at a time, showing to the class.
- Students are to write their answer in large print on their quarter folded paper or individual white boards and hold it in the air – no yelling out.
- When all answers are in the air, on the Teacher's count of three, everyone says the answer.
- Student volunteers then explain how they knew the number in the box.
- Repeat another three times, each time students using a new "face" on their quarter sheet.
- Teacher should be watching the class to see who knows the facts and who still needs help memorizing them, or at least using this type of thinking. These students need extra practice with the What's Missing? Cards. Be sure to make this a center activity. These cards can be made self-checking by writing answers on a Post-It-Note and attaching to the back.
- Be sure that you are using a variety of box placements each day so that sometimes the box is in the initial numeral position and sometimes the box is in the second numeral position.

Unit 2 – **Addition and Subtraction**
OPTIONS:

Option 1 - If the majority of your students need the controlled practice from Unit 1, then repeat that activity.

Option 2 – If the majority of your students are comfortable with finding the number in the box, divide the class into two teams and have the old-fashioned relay activity.

What's Missing? Relay (Make sure that almost all of your students can get the correct answer before playing this game.)
- Students line up in two equal lines, facing the Teacher.

- When the Teacher shows the What's in the Box? Card, the student at the beginning of each line calls out the answer.
- First student who calls out the correct answer gets the card.
- Both students go to the back of their respective lines.
- Repeat the process until either all students have had a chance to play, or all of the cards are gone.
- Winning Team is the Team with the most cards at the end of the game.

Unit 3 –Addition and Subtraction / Multiplication and Division

- **Lesson 1** – Addition and Subtraction, What's Missing? Relay
- **Lessons 2 –** Students work independently. Teacher shows one card at a time using 10 cards, and students write the answers on a piece of paper. No talking. Use as an Assessment of how well students can answer this type of basic fact practice. Teachers may want to select facts that have been difficult for the students. Do NOT use this as a speed test; however, you should be able to show the card and silently count four seconds. Students should be able to write the answer (answer only, not the problem) in that time.
- **Lesson 3 -** Multiplication repeat Unit 1 Activity

Unit 4 – Multiplication and Division

- **Lesson 1 –** Repeat Unit 1 Activity
- **Lessons 2 & 3 -** What's in the Box? Relay

Unit 5 – Multiplication and Division

- **Lessons 1 & 2 -**What's in the Box? Relay
- **Lesson 3 –** Students work independently. Teacher shows one card at a time using 10 cards, and students write the answers on a piece of paper. No talking. Use as an Assessment of how well students can answer this type of basic fact practice. Teachers may want to select facts that have been difficult for the students. Do NOT use this as a speed test; however, you should be able to show the card and silently count four seconds. Students should be able to write the answer (answer only, not the problem) in that time.

Unit 6 – Mixed Addition/Subtraction and Multiplication/Division

- **All Lessons -** Students work independently. Teacher shows one card at a time using 10 cards, and students write the answers on a piece of paper. No talking. Use as an Assessment of how well students can answer this type of basic fact practice. Teachers may want to select facts that have been difficult for the students. Do NOT use this as a speed test; however, you should be able to show the card and silently count four seconds. Students should be able to write the answer (answer only, not the problem) in that time.

Optional Daily Routines continued
MONEY MATTERS – All materials now found on MAS Space

- Money Matters is a new addition to the Daily Routines in response to the National plea and the State's new student expectations regarding Financial Literacy. Each day will provide a brief lesson written specifically to the expectations appropriate to the grade band, as outlined in the 2014-2015 K-8 Math TEKS.
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- **5th Grade Expectations**
- (from Obj 10, Personal Financial Literacy)
- 10 (B) explain the difference between gross income and net income;
- 10 (C) identify the advantages and disadvantages of different methods of payment, including check, credit card, debit card, and electronic payments;
- 10(E) describe actions that might be taken to balance a budget when expenses exceed income; and
- 10(F) balance a simple budget.
-
- **6th Grade Expectations**
- (from Obj 14, Personal Financial Literacy)
- 14(B) distinguish between debit cards and credit cards;
- 14(C) balance a check register that includes deposits, withdrawals, and transfers;
- 14(D) explain why it is important to establish a positive credit history;
- 14(E) describe the information in a credit report and how long it is retained;
- 14(F) describe the value of credit reports to borrowers and to lenders;
- 14(G) explain various methods to pay for college, including through savings, grants, scholarships, student loans, and work-study; and
- 14(H) compare the annual salary of several occupations requiring various levels of post-secondary education or vocational training and calculate the effects of the different annual salaries on lifetime income.
-
- The tasks for this activity are found on MAS Space.

CGI Investigations!

Solve It!

Fraction Action

X Marks the Spot!

Measurement Lab

Target Number

Grades 5-6 Overview

Unit 1, Lesson 1 *Money Sense for Kids*

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine 30 – 45 minutes	pre-assessment	pre-assessment	pre-assessment	pre-assessment	• pre-assessment (1 per student)
Classroom Lesson 1 hr – 1.5 hrs	Add and subtract positive rational numbers fluently.	**Reading Objectives:** Understand an informational text by making connections to your own experiences. Use visual and context support, support from peers and teachers to read text, enhance and confirm understanding. **Language Objectives:** Use prior knowledge and experiences to understand meanings in English. Speak using grade-level content area vocabulary in context to internalize new English words and build academic language proficiency.	**Transition to Math** Review math vocabulary.	• 6 deca-dice (10 sided numbered 0-9) • Small sticky notes	• **BLM** 1 Pictures • **BLM** Word Cards
TV Lesson 30 minutes	Use addition and subtraction to solve problems involving whole numbers and decimals.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Solve addition and subtraction money situations.	• scratch paper	• **BLM** Piggy Bank Story Problems

Follow-up Lesson 30 min. – 1 hour *(including Snack Fractions)*	Use addition and subtraction to solve problems involving whole numbers and decimals.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Practice and Application** Students practice addition and subtraction of decimals in money situations through the game Money Mayhem.	• 6 deca-dice (10-sided numbered 0-9) • 1 coin • set of digit cards (if dice are not available) • scratch paper *All items listed above per partner pair.*	• **BLM** Money Mayhem Game Directions • **BLM** Money Mayhem Record Sheet
Snack Fractions	Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents. Convert between fractions, decimals, and percents. Estimate to find solutions to problems involving fractions, decimals, and percents.	Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.	Students will work in pairs and explore fraction and decimal concepts through fair-sharing apples.	• 1 large apple • 2 paper dessert plates • 2 napkins • 1 plastic knife *All items listed above per partner pair*	• **BLM** Apple-Snack Fractions • **BLM** Apple-Snack Fractions Teacher Guide

Grades 5-6 Overview

Unit 1, Lesson 2 *Money Sense for Kids*

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine 30 – 45 minutes	Solve problems using a measurement tool and calculating measurements. Model and solve multistep word problems. Solve problems involving fractions, ratios, and proportions. Solve for a variable. Compose and decompose numbers.	Speak to partners, teacher, and class using vocabulary. Discuss problem solving process and strategies.	**Essential:** • Measurement Lab • Solve It! Problems • Fraction Action • *X* Marks the Spot • CGI **Optional:** • Target Number 12 • Money Matters	• ruler (cm) • 4 different polygons (options provided on BLM)	• **BLM** Perimeter Pandemonium (1of 2)-Measurement Lab Record Sheet • **BLM** Polygon Options • **BLM** Solve It! Problems 1-2 • **BLM** Fraction Action and *X* Marks the Spot • **BLM** Lessons 2-3 CGI ***Money Sense for Kids (Lesson 1)***
Classroom Lesson 1 hr – 1.5 hrs	Represent ratios and percents with concrete models, fractions, and decimals	**Language Objectives:** Use vocabulary words from the text in an illustration, a definition, and a contextualized sentence. Analyze cause and effect relationships from the book.	**Transition to Math** Discuss earning money at various rates (hourly, weekly, monthly, etc.) and finding percentages.	• 4 unlined sheets of paper for each student • Pencils • Dictionary or online dictionary resource • collection of newspapers and/or magazines where students may find different types of rates and ratios	
TV Lesson 30 minutes	Add and subtract positive rational numbers fluently. Use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Learn four different strategies to solve multiplication and division problems in money situations.	• base-10 blocks • thin-tip markers • large construction paper (1 per student)	• **BLM** Tasty Tamales!

Follow-up Lesson 30 min. – 1 hour *(including Snack Fractions)*	Use addition and subtraction to solve problems involving whole numbers and decimals.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Practice and Application** Students learn how to use a ratio table to solve problems including ratios, rates, and unit rates.		• **BLM** Tasty Tamales! • **BLM** Recursive Review Problems Lessons 1-3
Snack Fractions	Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents. Convert between fractions, decimals, and percents. Estimate to find solutions to problems involving fractions, decimals, and percents.	Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.	Students will work in pairs and explore fraction and decimal concepts through fair-sharing ice cream sandwiches.	• 1 large ice cream sandwich • 2 paper dessert plates • 2 paper towels • 1 plastic knife • 2 pieces wax paper • 2 pair of scissors *All items listed above per partner pair*	• **BLM** Ice Cream Sandwich-Snack Fractions • **BLM** Ice Cream Sandwich –Snack Fractions Teacher Guide

Grades 5-6 Overview

Unit 1, Lesson 3 *Money Sense for Kids*

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine 30 – 45 minutes	Solve problems using a measurement tool and calculating measurements. Model and solve multistep word problems. Solve problems involving fractions, ratios, and proportions. Solve for a variable. Compose and decompose numbers.	Speak to partners, teacher, and class using vocabulary. Discuss problem solving process and strategies.	**Essential:** • Measurement Lab • Solve It! Problems • Fraction Action • *X* Marks the Spot • CGI **Optional:** • Target Number 24 • Money Matters	• tape measure or ruler (cm) • set of various real world objects with polygon faces (ex: cereal box, stop sign, tent, etc.)	• **BLM** Perimeter Pandemonium (2of2)-Measurement Lab Record Sheet • **BLM** Solve It! Problem 3 • **BLM** Fraction Action and *X* Marks the Spot • **BLM** Lessons 2-3 CGI ***Money Sense for Kids (Lesson 1)***
Classroom Lesson 1 hr – 1.5 hrs	Add and subtract positive rational numbers fluently. Use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates. Represent ratios and percents with concrete model, fractions, and decimals.	**Language Objectives:** Read a contextualized sentence that includes a vocabulary word. Read the definition for a vocabulary word. Identify words related to vocabulary words. Analyze the meaning of common idioms.	**Transition to Math** Students practice adding and subtracting decimals and solving ratio problems with ratio tables.	• 5 unlined sheets of paper • pencil • colors/markers	

TV Lesson 30 minutes	Use addition and subtraction to solve problems involving whole numbers and decimals. Use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates. Represent ratios and percents with concrete model, fractions, and decimals.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Students explore rates, ratios, equivalent ratios, and percents through money situations. They will learn how to set up equivalent ratios and bar models.		• **BLM** Danny's Income
Follow-up Lesson 30 min. – 1 hour *(including Snack Fractions)*	Use addition and subtraction to solve problems involving whole numbers and decimals. Use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates. Represent ratios and percents with concrete model, fractions, and decimals.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Practice and Application** Students learn how to play the Family Fun game with a partner or group.	• Family Fun Generic Game Board • Family Fun Movement Cards • Unit 1 Family Fun Problem Cards for grades 5-6 (yellow) • Family Fun Answer Key for Unit 1 (all grade bands) • Unit 1 Family Fun Special 5^{th} – 6^{th} Game Instructions • game markers	• **BLM** Recursive Review Problems Lessons 1-3
Snack Fractions	Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents. Convert between fractions, decimals, and percents. Estimate to find solutions to problems involving fractions, decimals, and percents.	Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.	Students will work in pairs and explore fraction and decimal concepts through fair-sharing string cheese.	• 5 large string cheese • 4 paper dessert plates • 4 paper towels • 4 plastic knives • 4 pieces wax paper • 4 pairs of scissors *All items listed above per partner pair*	• **BLM** Sting Cheese-Snack Fractions • **BLM** String Cheese-Snack Fractions Teacher Guide

Project SMART/Math MATTERS 2014

Grade Level: 5-6	Unit 1 / Lessons 1 – 2 – 3

Daily Routine Math Objectives:
Solve problems using a measurement tool and calculating measurements.
Model and solve multistep word problems.
Solve problems involving fractions, ratios, and proportions.
Solve for a variable.
Compose and decompose numbers.

Daily Routine Language Objectives:
Speak to partners, teacher, and class using vocabulary.
Discuss problem solving process and strategies.

Unit Math Objectives:
Use addition and subtraction to solve problems involving whole numbers and decimals.
Use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates.
Represent ratios and percents with concrete model, fractions, and decimals.

Unit Language Objectives:
Use prior knowledge and experiences to understand meanings in English.
Speak using grade-level content area vocabulary in context to internalize new English words and build academic language proficiency.

Technology Objectives:
Use research skills and electronic communication, with appropriate supervision, to create new knowledge.

Vocabulary

Math:	fraction, ratio, decimal, percent, interest, rate, equivalent
Language:	deposit, withdrawal, budget, salaries, balance, account, savings, credit

Resources/Literacy Links
Money Sense for Kids by Hollis Page Harman, PFP
www.kidsfinance.com

Lesson Sequence

- Daily Routine: 30 – 45 minutes
- Classroom Lesson: 1 hour – 1.5 hours
- Math Lesson: 30 minutes
- Classroom Follow-up including Independent Writing: 30 minutes - 1 hour

Technology Connections

- **Math Practice**

  http://senseanddollars.thinkport.org/
  Cool site for kids to learn about gross and net income and simulate a month's earnings and bill paying.
  http://www.smartygames.com/igre/math/learnMoney.html
  Game to select coins to pay for various priced toys – easy to difficult levels
  iPad App – Count Money
  Four levels of difficulty; choice of 10, 25 or 50 problems

- **Science Connection**

  http://www.ehow.com/info_10065600_sixthgrade-science-projects-pennies.html
  Several science activities involving pennies.
  http://www.ehow.com/info_79http://www.ehow.com/info_8109377_science-floating-coin-different-liquids.html
  Will a coin float?
  http://www.usmint.gov/kids/games/
  Inventor's Challenge; When Pigs Fly

- **Social Studies Connection**

  http://www.clevelandfed.org/Learning_Center/Online_Activities/explore_money/index.cfm?DCS.nav=Local
  Explore Money From Around the World
  http://www.newmoney.gov/newmoney/dyob/index.html
  Interactive designing your own bill
  www.bis.gov/cpi
  Click on Inflation Calculator to see how much prices from years ago would cost now.

- **Probability**

  Set up a center for coin tossing – students flip a coin and keep record of heads or tails. How long will it take to get to the 50:50 chance of either coming up?

- **Art Connection**

  http://moneyandart.tumblr.com/
  Here are some really nifty highlighted art objects made from coins and bills. Perhaps students could use their play money to generate their own art projects.
  http://www.youtube.com/watch?v=RkRvuLfIYhI
  Folding an easy angelfish from a dollar bill.

Sheltered Instruction Strategies

Daily Routines  **Objectives –**  **Vocabulary –.**  **Student Interaction**  **Questioning**  **Graphic Organizers**	• Every activity has a specific **objective** as outlined in the Daily Routines Explanation of the Teacher's Guide. • Use and expect your students to use the **vocabulary** from your word wall as they work through the activities in this section. • **Students are to interact** through working in pairs, small groups and whole class during these activities. • Generic **questions** are found in the Daily Routines Explanation and in the graphing section of the curriculum. Questions are often provided in the Measurement Lab teacher overview in the curriculum. • **Graphic organizers** are provided for many of the Daily Routines, in particular Measurement Lab, STAAR Performance, Fraction Action.
Classroom Language Lesson  **Objectives**  **Vocabulary**  **Student Interaction**  **Questioning**  **Graphic Organizers**	• Post the **objectives**, read them along with the students and discuss what they mean in context of the lesson. Provide visuals and examples to clarify and/or simplify. At the end of the lesson, review the objectives again and have the students respond indicating how the objectives were met for the lesson. • Introduce the key **vocabulary** for the lesson by defining in concrete terms using visuals or realia. Use the vocabulary in context during the lesson and provide students multiple opportunities to practice using the words. Refer back to the vocabulary when it naturally occurs during the lesson. • **Student interaction** opportunities are structured throughout the lesson by providing hands-on, literacy-based activities that are tied back to the objectives. Interaction accesses the thought processes of the students. Time is embedded into the lesson to allow students the opportunity to experience the four modalities of language building: listening, speaking, reading and writing. • Various levels of **questioning** are included in the script to allow the teacher a window into the thought processes of the students and to monitor for comprehension. • **Graphic organizers** are visuals that assist students in making connections between the parts and the whole picture and keeping information organized. Graphic organizers are used in the lesson to provide background and make abstract concepts into more concrete experiences. Check the blackline masters to use these important tools.
Transition to Math  **Objectives**  **Vocabulary**  **Student Interaction**	• Read through the **objectives** before you begin the lesson, explaining what the skills are to be learned. At the end of the lesson, reinforce the students' learning by reading through the objectives again, having the students tell you what activities helped them to learn each skill. • **Vocabulary** is critical to the students' learning. Use and expect your students to use the vocabulary from this lesson and previous lessons as pertinent to the activity. • Pairs, small groups, whole class **student interaction** is built into the lesson so that students can discuss and learn through hands-on interaction. The point of all math lessons is for students to truly understand the mathematics behind the arithmetic, to use problem solving skills and to see and use patterns and relationships.

 **Questioning**  **Graphic Organizers**	• **Questioning** is written into the script so that the teacher has easy access to beginning questions. The students' answers will most likely give you opening for other questions that lead to greater understanding. • **Graphing Organizers** are peppered throughout the curriculum in the form of graphs, charts, tables, cloze, record sheets. Check the blackline masters to use these important tools.
TV Lesson  **Objectives**  **Vocabulary**  **Student Interaction**  **Questioning**  **Graphic Organizers**	• The TV Teacher will read through the **objectives** before beginning the lesson, explaining what the skills are to be learned. At the end of the lesson, she will reinforce the students' learning by reading through the objectives again. It will be important for you to have the students tell you what activities helped them to learn each skill. • **Vocabulary** is critical to the students' learning. The TV Teacher will use the appropriate vocabulary during the TV Lesson. It is expected that your students will use the vocabulary from this lesson and previous lessons as they work with the TV Teacher. • As the TV Teacher works through the lesson, she will provide quick as well as more sustained pauses for **student interaction.** It is important that the students use this time to quickly respond to her questions and to learn through hands-on interaction. The point of all math lessons is for students to truly understand the mathematics behind the arithmetic, to use problem solving skills and to see and use patterns and relationships. • **Questioning** is written into the TV script. The Classroom Teacher will be the key factor in facilitating the answers from the students. It is important that the students are fully engaged in the lesson in all manner, including answering the questions. • **Graphing Organizers** are peppered throughout the curriculum in the form of graphs, charts, tables, cloze, record sheets. Check the blackline masters to use these important tools.
Follow-up Lesson  **Objectives**  **Vocabulary**  **Student Interaction**  **Questioning**  **Graphic Organizers**	• **Objectives** for the Follow-up lesson are usually expanded from the TV Lesson. Reading them before the lesson and again after the lesson while students explain through what activity they experienced the objective is important. • **Vocabulary** is practiced and applied during this lesson. Use and expect to hear your students use appropriate and mathematically correct terms. • **Students Interact** through pairs, small group, and whole class experiences. • **Questions** are provided in the script as well as in a section titled "Questions" to help the Classroom Teacher clarify, to probe for deeper understanding, and to enrich their learning experiences. • Most lessons provide **graphic organizers** such as record sheet, game score sheets, tables to help students see patterns and relationships.

Snack Fractions	
 **Objectives**  **Vocabulary**  **Student Interaction**  **Questioning**  **Graphic Organizers**	• As with all of the portions of this curriculum, **objectives** are stated clearly at the beginning of the lesson and reviewed by you and your students at the end of the lesson. Snack Fractions will work on the same objectives through one unit. • **Vocabulary** is very specific in working with fractions. Use and expect your students to use the fraction vocabulary and the dialog as scripted to help them put mathematical language to what they are experiencing with their snacks and graphic organizers. • **Students interact** in partners during this activity. As you circulate the room, listen for their interaction – the fundamental understandings they have about fraction, and their use of fraction language. • **Questions** are provided as springboards to lead you into deeper discussions, to help clarify student understanding, to assist students in probing deeper into fractional relationships, and to extend their experiences. • Every snack fraction offers **a graphic organizer** in the form of record sheets accompanied by cut and paste models as appropriate to the lesson.

Unit 1 OPTIONAL All-School Project

Because all grade bands will be reading, learning and researching within the same unit theme, we are offering OPTIONAL projects in which all ages can participate.

Unit Theme: Money

Unit 1: Money Project

Defined:
Students work as a full campus to decide upon a money making project to donate to a local need. Each grade band works within their own abilities to generate the money-making. This should not be a "candy" or "wrapping paper" sale. Products should be produced by the students rather than selling a vendor's materials.

Materials: (depends upon the money raising project you select)

Objectives: (add your own objectives to the project)

- Students gain empathy for a local need.
- Students learn about money, its uses, income and expenses.

Procedures:

1. Decide as a campus on a local need to which to donate.
2. Decide as a campus how to raise money during the summer session for the need.
3. Work toward the goal.
4. Once you've ended the collecting, tally the results and celebrate.
5. Advertise your results.

Online Resources:

- http://www.better-fundraising-ideas.com/recycling-for-charity.html
  Many recycling ideas. This could be an on-going collection, with the kick off during this unit.
- http://www.better-fundraising-ideas.com/school-calendars-fundraising.html
  Have students create their own calendars, and run them off at the school.
- http://www.better-fundraising-ideas.com/funny-fundraising-ideas.html
  So this one is a bit quirky, but could be interesting if you have the field room.

Project Title: _____

Student Name: _____

Date: _____ Teacher: _____

Math MATTERS Project Rubric

	1 point	2 points	3 points	4 points	Score
Amount of Project Completed	Little effort made, most items are unaddressed or incomplete	Some parts of the project were addressed and complete	Most of the project parts were addressed and complete, a few may be missing	All parts of the project were addressed and complete	
Quality of Work	Could not read project, project poorly organized	Project was partially organized, many parts were confusing or unrelated	Project was mostly organized, a few parts may be confusing or unrelated	Project highly organized and all parts clearly related to the topic	
Use of Time and Effort	Did not use time effectively	Used some time effectively, but was often off task	Used most time effectively, occasionally off task	Student used all available time to the fullest	
Presentation	Student could not explain own project	Student needed to be prompted to explain own project	Student explained project with little prompting	Student easily explained the project and could answer questions	
				Total	

A total score of 12 or more points is needed to consider the project complete.

Notes:

Rubric is an adaptation of Rcampus Math Project Rubric: Fraction Word Problems
http://www.rcampus.com/rubricshowc.cfm?code=F945W8&sp=true&

Materials
- pre-assessment

Math Objectives
- pre-assess summer skills

Language Objectives
- pre-assess summer skills

Math Vocabulary
fraction
ratio
decimal
percent
interest
rate
equivalent

Literature Vocabulary
deposit
withdrawal
budget
salaries
balance
account
savings
credit

Assessed TEKS for this Unit
5th – 5.3H, 5.3K
6th – 6.4C, 6.4E, 6.5B

ELPS (*English Language Proficiency Standard*) 2A, 2B, 2C, 4C, 4J, 5D

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.C.2., I.C.3., II.D.1
ELA II.A.2., II.A.4., II.B.2.
MATH II.A.1., II.A.2., II.D.1., VI.C.2., IX.A.1., IX.A.3

Unit 1, Lesson 1 — Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post-assessment. They are not optional.

ESSENTIAL

Measurement Lab (5th assessment items 1,2,6)
- **Lesson 1 – *omit***
- Lesson 2 – perimeter, polygons
- Lesson 3 – perimeter, real objects

Solve It! Multi-step problem solving (5th assessment items 4,5)
- **Lesson 1 –** pairs, 2 step
- Lesson 2 – pairs, 2-step
- Lesson 3 – independent, 2-step

Fraction Action
- **Lesson 1 – *omit***
- Lesson 2 – (5th grade assessment item 6)
- Lesson 3 – (5th grade assessment 1,2,3,4,5,6)

***X* Marks the Spot**
- **Lesson 1 – *omit***
- Lesson 2 – (5th grade assessment items 4,5)
- Lesson 3 – (5th grade assessment items 1,2,3)

CGI
- Lesson 1 – *omit*
- Lesson 2 – Compare Referent Unknown (5th grade assessment item 5)
- **Lesson 3 – Price Partitive Division (6th grade assessment item 6)**

The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.

OPTIONAL

Target Number
- **Lesson 1 – *omit***
- Lesson 2 – Target Number 12
- Lesson 3 – Target Number 24

Money Matters
(*If you have a full program and wish to use this optional activity, you will find the activities online on MAS Space.)*

Unit 1 **CGI Problems for *Money Sense with Kids***

	Multiplication	Measurement Division	Partitive Division
Grouping and Partitioning	Anita put __ away in her Short Term money jar every week for __ weeks. How much did she have in the jar then? ($9.50, 5) ($11.25, 6)	Anita had ___. She wanted to give several charities ___ each. How many charities could she donate to? ($45.00, $15.00) ($70, $17.50)	Anita had ___ dollars she wanted to divide equally among her ___ money jars. How much should she put in each jar? ($363, 3) ($366, 6)
Rate	Margo worked in a bakery. She could knead a loaf of bread every __ minutes. At that rate, how long would it take her to knead __ loaves of bread? (10, 5) (7, 8)	Margo worked in a bakery. She could knead __ loaves of bread in one hour. At that rate, how long did it take them to knead __ loaf(ves) of bread? (7, 1) (7, 2) (9, 3)	Margo worked in a bakery. She could knead __ loaves of bread in 40 minutes. At that rate, how many loaves could she knead in __ minutes? (8, 5) (5, 20) (4, 30)
Price	Eloy bought 7 pounds of white fish for $2.50 a pound. How much did he pay for the fish?	Eloy paid $21.77 for fish that cost $7 a pound. How many pounds of fish did he buy?	Eloy paid a total of $45 for 15 pounds of shrimp. How much did he pay a pound for the shrimp?
Fractions	Sammy and his 3 friends had each eaten personal sized pizza for lunch. Each had one-sixth of his pizza leftover. If they put their leftovers together, how much pizza would they have?	Sammy wanted to make pizza dough. The recipe called for ½ cup flour per pizza. If Sammy had 5 cups of flour, how many pizzas could he make?	Sammy's recipe for pizza called for 3/4 cup sausage per pizza. If Sammy could make 8 pizzas, how many cups of sausage did he have?

	Multiplicación	División de medidas	División partitiva
Agrupamiento/ División	Anita guardó ____ en su alcancía a corto plazo cada semana durante ____ semanas. ¿Cuánto dinero tenía en la alcancía entonces? ($9.50, 5) ($11.25, 6)	Anita tenía _____. Anita quería hacer donativos a varias organizaciones benéficas a razón de $15 cada una. ¿A cuántas organizaciones benéficas pudo donar? ($45.00, $15.00) ($70, $17.50)	Anita tenía ___ dólares que quería dividir igualmente entre _____ alcancías. ¿Cuánto dinero puede poner en cada alcancía? ($363, 3) ($366, 6)
Cociente	Margo trabajaba en una repostería. Podía amasar una barra de pan cada _____ minutos. A tal razón, ¿cuánto tiempo le tomaría amasar ____barras de pan? (10, 5) (7, 8)	Margo trabajaba en una repostería. Podía amasar ____ barras de pan en una hora. A tal razón, ¿cuánto tiempo le tomaría amasar _____barra(s) de pan? (7, 1) (7, 2) (9, 3)	Margo trabajaba en una repostería. Podía amasar _____barras de pan cada 40 minutos.A tal razón, ¿cuántas barras de pan podía amasar en _____ minutos? (8, 5) (5, 20) (4, 30)
Precio	Eloy compró 7 libras de pescado blanco a $2.50 la libra. ¿Cuánto pagó por el pescado?	Eloy pagó $21.77 por pescado que cuesta a $7 la libra. ¿Cuántas libras de pescado compró?	Eloy pagó un total de $45 por 15 libras de camarones. ¿Cuánto pagó por libra de camarones?
Fracciones	Sammy y sus 3 amigos habían comido pizzas individuales para el almuerzo.A cada uno de ellos le sobró una sexta parte de su pizza. Si juntaran sus sobras, ¿qué cantidad de pizza tendrían?	Sammy quería hacer masa de pizza. La receta llevaba ½ taza de harina por pizza. Si Sammy tenía 5 tazas de harina, ¿cuántas pizzas pudo hacer?	La receta de pizza que Sammy usó llevaba ¾ de taza de chorizo por pizza. Si Sammy pudo hacer 8 pizzas, ¿cuántas tazas de chorizo usó?

Unit 1 Lesson 1 – Daily Routines – Solve It! (pairs)
One per partner pair

Problem 1:
Fred's Funny Farm is a fun family petting zoo. He didn't have very many animals when he started so it only cost him $378.49 the first month to feed them. The kids who visited loved the bunnies and goats the best. Fred decided to buy a few more of each and it raised his food bill the next month to $455.13. How much did Fred spend on food for the first two months?

- What is the answer to the question? Show your solution strategy.

Problem Solution (Partner #1) Name:	**Solution Verification** (Partner #2) Name:

Problem 2:
His business kept growing so he purchased a few more mini-horses and a family of geese. His food expense went up to $693.18. How much did Fred spend in those three months feeding his animals?

- What do you need from Problem 1 to solve Problem 2?
- Be sure to verify the answer to Problem 1 before solving Problem 2.
- What is the answer to the question? Show your solution strategy.

Problem Solution (Partner #2) Name:	**Solution Verification** (Partner #1) Name:

Unit 1 Lesson 1 – Daily Routines – Solve It! (pairs)
One per partner pair

Compañero # 1 - Problema 1:
La Granja Divertida de Fred es un divertido zoológico interactivo familiar. Él no tenía muchos animales cuando inició, así que alimentarlos sólo le costó $378.49 el primer mes. A los niños que lo visitaron les gustaron los conejos y las cabras más que cualquier otra cosa. Fred decidió comprar algunos conejos y cabras más y esto elevó su factura de comida del próximo mes a $455.13. ¿Cuánto gastó Fred en alimentar a sus animales en los primeros dos meses?

- ¿Cuál es la respuesta de la pregunta? Muestra tu estrategia.

Solución del problema (**Compañero** #1) Nombre:	**Verificación del problema** (**Compañero** #2) Nombre:

Problema 2:
Su negocio siguió creciendo, así que compró algunos caballos miniatura más y una familia de gansos. Su gasto en comida subió en $238.05 respecto al mes anterior. ¿Cuánto gastó Fred en alimentar a sus animales en esos tres meses?

- ¿Qué necesitas del primer problema para resolver Problema 2?
- Asegúrate de verificar la respuesta al Problema 1 antes de resolver Problema 2.
- ¿Cuál es la respuesta de la pregunta? Muestra tu estrategia.

Solución del problema (**Compañero** #1) Nombre:	**Verificación del problema** (**Compañero** #2) Nombre:

Grade Bands: 3-4 and 5-6, Unit 1 and 2 Writing Workshop

- **Genre:** Informational Text
- **Writing Objective:** Students create an informational book about Creating a Business.
- **Audience**: people wanting to begin a business
- **Organization of text**: Broken into sections

Students choose what sections they want their book to have. Encourage students to have a minimum of **three sections** for grades 3-4 and a minimum of **five sections** for grades 5-6. However, for less proficient writers you may suggest they focus on fewer sections, and for more proficient writers you can push them to create more sections. The following are some possible topics for sections. Foster topics based on what students learned during the first week's lessons, as well as additional reading or research from the library or internet. You may think of other topics based on what students have learned during the math portion of the curriculum this unit. If you prefer, you can create a web (or other graphic organizer) of ideas or begin with a freewrite.

- Importance of money (to businesses, individuals, country)
- What is a business all about?
- What are some business ideas?
- Business experience is great
- What is a business plan?

Option: Students can talk to at least two classmates about their topic and list of ideas. Take on notes on their peers' suggestions. Encourage students to listen to their peers' suggestions for the purpose of helping bring in the focus of their topic.

Week 1

Day 1: Brainstorm- Explain to students that many books are written to teach people about something. Since they are becoming experts in MONEY and next week they will be reading about an artist entrepreneur, they can write a book to teach other kids about some of the things they've learned this week. Ask students: What are some things you've learned so far about money and business?

Have students brainstorm (referring to class copies of the book will help with this). Jot down a list of student's ideas on chart paper. You may need to rephrase what students share so that it sounds like a heading in a book (such as the ones listed above). Have students choose three sections from the list, and write them down so they're ready for the next Writing Workshop.

Day 2 & 3: Research and Draft- ***Model*** for students how to create their informational books by doing one page together as a class. It's best to use paper that has a space for drawing a picture at the top, with lines underneath. This is particularly helpful for ELLs, but useful for all students, since illustrations are an important part of an informational text. Encourage students to write on every other line, allowing room for edits. When you model, you're showing students how you think aloud – "What do I know about this topic?" You can model listing the details you know aloud, or referring to a book or website (www.teachingkidsbusiness.com) to recall specific details. You're also modeling how to elaborate on sentences you've written so that in the end, the section is at least one well developed paragraph, if not two paragraphs.

Then provide time for your students to write independently. This writing time includes the illustrating.

Week 2

Day 1 & 2: Revise- Work on elaboration with students who are ready. What else could they add to this section? Are there other details from the book that they want to include? Could they explain a particular sentence more, perhaps using an example or describing one of their own experiences? Encourage students to make these personal connections to more deeply explain the money topics, since they had a lot of experiences during the Classroom Lessons.
If you notice that many of your students are making the same kind of errors, that's a sign that a whole-class mini-lesson is necessary. Provide examples from student drafts to assist with the lesson. One-on-one conferences may be necessary in order to assist particular students, continue to provide feedback and monitor the students' writing.

Day 3: Publish- Have students staple their pages together to create their book. They can read their book to a partner to share the information they have written. Or, team up with another grade band, and have your 3rd and 4th graders share their books with a student from that class. This works well because all of the grades are reading and learning about similar topics in both of these units. The other class could share their writing with your students as well.

Materials
- **BLM** 1 Pictures
- **BLM** Word Cards
- Small sticky notes
- 6 deca-dice (10 sided numbered 0-9)
- Wide tipped colored markers

Literature Selection
Money Sense for Kids
by Hollis Page Harman, PFP
(Earn It p.61 and Grow It p. 85)

Math Vocabulary
fraction
ratio
decimal
percent
interest
rate
equivalent

Literature Vocabulary
deposit
withdrawal
budget
salaries
balance
account
savings
credit

Teacher Note
Students will have more to link with background knowledge when the teacher poses a question while showing photos, illustrations, and/or real objects related directly to the topic. Photos and illustrations can come from a textbook, the Internet, or other resources.

ELPS (*English Language Proficiency Standard*) 2D, 2H, 3C, 4E, 4F, 4J, 4K

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR II.A.4., II.A.5., II.A.6
ELA II.A.2., II.A.3., II.A.4., III.B.2

Unit 1, Lesson 1 — Grades 5-6

Classroom Lesson

Every day teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

Math Objectives:
- Add and subtract positive rational numbers fluently.

Reading Objectives:
- Understand an informational text by making connections to your own experiences.
- Use visual and context support, support from peers and teachers to read text, enhance and confirm understanding.

Language Objectives:
- Use prior knowledge and experiences to understand meanings in English.
- Speak using grade-level content area vocabulary in context to internalize new English words and build academic language proficiency.

BEFORE READING
Building Background – Literature and Vocabulary
Show students a bill of any denomination and/or a credit card. If actual items are not available use pictures, **BLM** 1 Pictures.
Ask students to name the items. Confirm their answers.

Ask, "What do we do with these items? What do we need money for?" Say, "Now think about this next one before you answer- What do you want or need that your parents won't buy for you?" Allow various answers.

Show students the cover of the book, ***Money $ense for Kids!,*** and read aloud the title and author's name. Ask, "Do you think this book is a fiction, telling a story with characters and a plot or nonfiction, giving us information?" Allow for answers.

Say, "This book is nonfiction told in the author's voice. She will guide us through how to earn and save money to buy the things we want or need. There are four parts in this book, each chapter teaching a different topic about money. *(Show the Table of Contents, reading aloud the four parts and title of each chapter.)*

You can read any of the chapters you are interested in during Independent Reading time. As a class, we will be reading chapter 6 "Earn It" and chapter 10 "Banks and Tricycles" together this week.

Unit 1, Lesson 1 — Grades 5-6
Classroom Lesson - continued

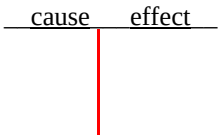
Technology Option
Find a bank account application online to show students.

Both chapters will help us understand how we can earn and add to money we are saving."
Display vocabulary cards in pocket chart, chalk board, or on bulletin board where all students can view.

Say, "These words are located in the book that we will be reading. Let's find out which of these words sound familiar to you. Remember that the topic we are reading about is money. If you know the word's meaning, respond with a thumbs up. If you do not know the word's meaning, respond with thumbs down. If you are not sure, respond with thumb sideways."

Read aloud the words, prompting the students to echo the words after you. Pause for students to hold their thumbs in the direction to reflect their understanding of the words. Periodically, ask students with their thumbs up to tell when they heard or saw the word before to allow more practice for oral language.

Cause & Effect T-chart



Say, "We will continue to check our understanding of these words as we read by using clues in the text to help us define the words."

DURING READING
Comprehensible Input – Literature and Vocabulary
Throughout the reading, you will help students focus on the reading skill of cause and effect, while utilizing text features *(graphs, charts, tables, bolded or italicized text)* to clarify understanding. After reading each section, you will add a short phrase or sentence to a cause and effect T-chart. This will help students to visually understand how actions or suggestions the author makes can result in earning or growing their money savings. Have a chart on a poster or on the board where you can add the phrases/sentences.
Also, throughout reading you will guide students in recognizing key vocabulary in text. Students will place a small sticky note above the vocabulary word in the text. This strategy will later be utilized to identify any words the students find unfamiliar *(or sticky word)* and might not be a vocabulary word listed.

Sticky note example for vocabulary word:

Fill out a new account form.

Listening Comprehension
Students are following along in their text. If possible model your tracking of pointing to the paragraph or sentence you are reading.

Say, "Before we begin let's look at page 1 in the book. The author will refer to jars of money in the chapters. Do you see the three jars on this page? What are they labeled? What do you think these mean?" Allow for various answers. Say, "These jars are used in this book to show three types of money savings you could have. The author will also speak about "Max and Zoe", these are her children. You will read how they earned and saved money in the book."

Unit 1, Lesson 1 — Grades 5-6

Classroom Lesson - continued

Have students turn to page 52.
Say, "This page begins Part Two of the book titled, *Add to it*. Hmmm, What is 'it'? …'it' could mean the jars. I see money in the jars, so I think 'it' is referring to the money savings. In this part of the book we will learn how to add to or increase our money savings."
Have students turn to page 62.

p. 62 "Ask your family if…" (After reading the first two paragraphs)
Monitoring for Comprehension

- Teacher Think Aloud: I'm looking ahead before reading and I see two main subtitles- *Sell Something* and *Do a Job.* So the author is suggesting some ideas for me to increase my cash. Maybe I will think of other things I can sell or other jobs as I read this list.

p. 62 "Sell Something…" (After reading "…holders made from clothespins" p. 64)
Monitoring for Comprehension

- Teacher Think Aloud: Ah ha! I have many things I could sell in a garage sale to earn money and I know that I can bake really good cakes *(or name any other job that is true for your identity)* so I might want to make a plan to sell birthday cakes.

p. 64 "Job Skills…" (After reading "Then pay your friend for helping you. p. 65)
Monitoring for Comprehension and application of T-chart

- Teacher Think Aloud: This part gave me a lot of information that could help me earn more at doing certain jobs depending on my skills. I remember reading "experience counts."
- Teacher Question: What do you think 'experience counts' means? Allow for responses and guide students to going back to the text to reread the sentence to locate the meaning. Then state: This is a cause and effect relationship. The more experience I have, then the more I charge or the more money I can make for doing that job. The cause answers 'why' to the effect.
- Strategy use: I'm going to use a T-chart to help categorize the cause and effect I discover through this text. Draw on the board a T-chart as seen here. Have students create a chart with you on their own scrap paper. Talk through what your write in the chart. Awesome- let me see if there's anything else I could add to the chart from this page.

cause	effect
more experience	charge more
responsible worker	more jobs
two jobs in one day	make twice as much money

Unit 1, Lesson 1 — Grades 5-6

Classroom Lesson - continued

- Reread the second paragraph under Job Skills on page 64. Ah-here's another. A responsible worker might get more jobs. Let me add this one to the chart. I wonder if there are more cause and effect relationships on this page. I'll reread the next paragraph (begin with "Let's say you've done…" p. 64).
- Yes! I hear another cause and effect. I think the cause is…do two jobs in one day and what do you think the effect is? Allow for answers. Guide students to connecting that twice as much money is earned through having a friend help complete the two jobs. I will add this one to the chart too.

p. 65 "Many adults started building…" Be sure to read information in the chart too. (After reading to end of p.66)

Determining Word Meaning

- Teacher Think Aloud: Reread the title of the chart on page 65 with me, *Salaries Earned by Some Adults.* Salaries is a word from our vocabulary, so I'm going to place a sticky note above it. The sticky note will make the word easier to locate later. Hmmm…This was one of the words I wasn't sure what it meant. What do you think *Salaries* means? Let me reread the sentence before the chart and after the chart to see if this helps. *(Reread)* Discuss with your partner *(shoulder partner or person across from you)* the meaning of salaries.
- Help students to see that the words/context within the sentences help to define salaries as money paid to do jobs. Then, place a checkmark on the sticky note. Explain that the checkmark means you understand the meaning of the word now and can use it in a sentence.

For the remainder of the reading, if time permits and students volunteer, allow them to read a portion of the passages aloud. Otherwise, continue reading as before.

p. 88 "Here's where the magic begins…" (After reading this page)

Monitoring for Comprehension

- Teacher Think Aloud: I heard several cause and effect relationships and I think I heard at least two of our vocabulary words. Let's start with the vocabulary words, since this might help with understanding more of what I read.

Word Meaning

- Direct students to put a sticky note above the two vocabulary words read on this page, *savings* and *account.*
- Teacher think Aloud for *savings*: At the top of the page we read "if you take the money you've saved to the bank…" so this helps me picture that savings must mean the money I've taken to the bank. I can check off this word because I understand its meaning and I can use it in a sentence.

- Teacher Think Aloud for *account*: Hmmm…I read "banks will let you have your own account" and I see on the next page we will read about how to open a bank account. What do you think an account is? Accept various answers. Then, either direct the students to place a checkmark if they understand or have them leave the sticky note blank until more clarification from further reading.

Monitoring for Comprehension

- Teacher Question: In this part we read about what happens when you put money in a bank. We read why the bank makes money and how you can make more money. These all sound like cause and effect. What could we add to our chart?
  If I know the effect was the bank makes money, what was the cause? Share your thoughts with a partner. Allow for answers and fill in the chart.
- Teacher Question: What is the effect of the bank paying you interest? Look back and share with the person across from you. Encourage sharing and add to the chart.

cause	effect
more experience	charge more
responsible worker	more jobs
two jobs in one day	make twice as much money
bank lends money at a higher interest	the bank makes money
bank pays you interest	you make money

p. 88 "Here's where the magic begins…" (After reading to second paragraph page 90)

Monitoring for Comprehension

- Teacher Question: What is the cause for the bank representative giving you an account and an account number? Talk it over with your partner. Add to the chart.

cause	effect
more experience	charge more
responsible worker	more jobs
two jobs in one day	make twice as much money
bank lends money at a higher interest	the bank makes money
bank pays you interest	you make money
fill out a new accounts form	bank gives you an account

p. 90 "Deposit Money…" (After reading to end of p. 91)

Word Meaning

- Teacher Question: What vocabulary word did we read in this part? Place a sticky note above the word. What does the word *deposit* mean? Talk to your partner.
- Help students see that the clue to the meaning of the word comes from the illustrated example on p.90 and from the second bulleted sentence on p. 91. Guide the students to checkmark their sticky.

Unit 1, Lesson 1 — Grades 5-6

Classroom Lesson - continued

Monitoring for Comprehension

- Teacher Question: What is the effect of making a cash or check deposit into your account at the bank? Tell the person across from you. Fill in your chart.

cause	effect
more experience	charge more
responsible worker	more jobs
two jobs in one day	make twice as much money
bank lends money at a higher interest	the bank makes money
bank pays you interest	you make money
fill out a new accounts form	bank gives you an account
make a deposit into your account	total amount in your account increases

p. 92 "Your Passbook…"(After reading last bulleted sentence at top portion of p. 93)

Word Meaning

- Teacher Question: What do you think the word withdrawal means? Let me reread the last sentence in the first paragraph on page 92. Reread. Place a sticky note above *withdraw*. Withdrawal is related to the root withdraw. The *–al* means "relating to." If we can determine the meaning of withdraw, then we will also understand the meaning of *withdrawal*.
- Guide students through knowing what deposit means will allow them to discover the meaning of withdraw.
- Let's reread another statement to further our understanding of this word. Reread the fourth bulleted point on p. 93. Clarify with your partner what the word *withdrawal* means. Direct students to place a checkmark on the sticky note.
- Teacher Question: Turn to your partner and show them where to locate the word *credit* on p. 92. Put a sticky note above it. Reread the last three sentences on p.92. What do you think the word credit means? Tell your partner.
- Guide students to not check off the sticky if they are not sure of the meaning or to check off the word if they understand the meaning. If the meaning is unclear, assure students that with further reading we will discover the meaning.
- Teacher Question: What is the meaning of the word balance on page 93? Reread the sentence when you locate it. Tell your partner.
- Guide students to discover that the last bulleted sentence read, "*find your balance, or total, on the date your statement…*" total is another word for balance. Check this sticky note.

Monitoring for Comprehension

- Teacher Question: What is the cause for the total amount in your account to decrease? Think about our vocabulary words we just clarified. Discuss your thoughts with your partner. Guide the students add the statements to the chart.

Unit 1, Lesson 1 — Grades 5-6

Classroom Lesson - continued

cause	effect
more experience	charge more
responsible worker	more jobs
two jobs in one day	make twice as much money
bank lends money at a higher interest	the bank makes money
bank pays you interest	you make money
fill out a new accounts form	bank gives you an account
make a deposit into your account	total amount in your account increases
make a withdrawal from your account	total amount in your account decreases

p. 93 "Your ATM card with a secret code…" (After reading to end of p. 94)

Monitoring for Comprehension

- Teacher Question: This is a good one to think on…What is the effect of having an ATM card? Talk to your partner, you might have different thoughts.
- Guide students to add to the chart the effects they have generated with their partner.
- Teacher Question: Here's one more…Why would you need to locate an ATM machine lower to the ground? Discuss this with the person across from you.
- Teacher Question: Which part of this reading helped you answer this question? Guide students to locating the first bulleted statement on p. 94. Reread. Add these statements to your chart.

cause	effect
more experience	charge more
responsible worker	more jobs
two jobs in one day	make twice as much money
bank lends money at a higher interest	the bank makes money
bank pays you interest	you make money
fill out a new accounts form	bank gives you an account
make a deposit into your account	total amount in your account increases
make a withdrawal from your account	total amount in your account decreases
you're in a wheelchair or cannot reach ATM	use ATM machine lower to ground

AFTER READING

Practice and Application –Literature and Vocabulary

Have the students look back at their T-chart for determining the cause and effect relationships from this portion of the book. **Teacher:** Restate to the students that the effects are the result of the cause. The cause is 'why' the effect or result happened. Ask the students the series of questions and allow them to respond using their T-Chart. Assist them in formulating a complete sentence using the short phrases from the chart.

- Why do banks make money?
- What is the result of taking two jobs in one day?
- What happens when you make a deposit into your account?
- Why would the total amount in your account decrease?
- Why would you receive more jobs?

Teacher Note
Deca-dice are ideal for 5th – 6th grade because digits range from 0-9 as opposed to 1-6 on regular cube dice. (6-sided dice significantly limit the number choices and mathematical experiences in this activity.) If deca-dice aren't accessible, use the number cards provided. Print on card stock, cut out, and hide in paper lunch sack. Players choose 6 numbers at random instead of rolling dice.

Teacher Note
The comma after the thousands place isn't necessary when groups are working through the calculations. The decimal is our main concern through this concept. Commas can make the arithmetic look "messy" as well as get confused with the decimals.

Unit 1, Lesson 1 — Grades 5-6

Classroom Lesson - continued

Transition to Math

Explain to students that the TV Lesson will talk about balancing bank accounts, adding deposits, subtracting withdrawals, and other bank related mathematics.

Now that students have had the chance to read the literature selection and experience the vocabulary words in a real world context add any clarifications, pictures, or examples to the vocabulary cards if necessary.

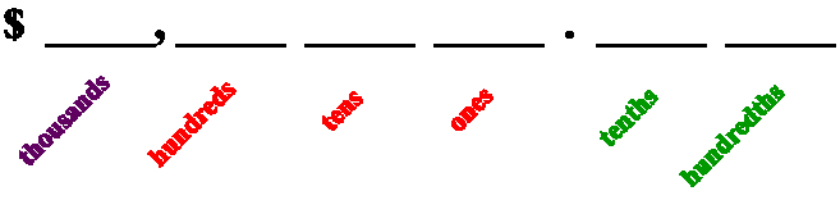
The focus of this activity is to solidify their place value foundation through addition and subtraction of decimals and to make sure they understand the difference between a deposit and a withdrawal. Perform this quick activity with students in pairs or small groups.

Deposit and Withdrawal Activity

Each group is given six deca-dice, scratch paper, and at least three different colored markers to write with. When rolled each die represents a number within a 6-digit money value *(whole dollars to the thousands place and decimals to the hundredths place).* Students may arrange numbers however they like *(including zeroes in the thousands place).*

Teacher will walk around room and monitor each group closely while cueing students through the activity.

1. Write a Money Value Places diagram on the board to remind students how the dice should be arranged. Label each place with its correct name *(thousands, hundreds, tens, ones, tenths, and hundredths)*. Students may write the diagram at the top of their scratch paper as well.



2. Cue class to roll their dice and arrange a 6-digit money value.
3. Students record money value on scratch paper with a colored marker.
4. Teacher announces either "deposit" or "withdrawal" to class. Students will need to determine if that means they will add or subtract their next value.
5. Cue class to roll dice again and arrange another 6-digit money value.

ELPS (*English Language Proficiency Standard*) 2D, 2H, 2I, 3D

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR III.A.2., III.B.2., IV.B.1
MATH V.B.1., V.B.2., VIII.B.2

Teacher Note*
This lesson does not cover negative numbers; however differentiate the activity based on student's prior knowledge and grade level. 5th grade will not yet have experience with negative numbers in a formal classroom setting, but 6th grade students will. Feel free to include the concept of an overdrawn bank account with students even if it is discussion based without calculations

Unit 1, Lesson 1 — Grades 5-6

Classroom Lesson - continued

6. Students record money value on scratch paper with a DIFFERENT colored marker. Teacher checks to make sure place value spots (or decimals) are lined up correctly and that money values are in the correct order to arrive at a positive answer when subtracting. (See Teacher Note*)
7. Repeat process alternating between "deposit" and "withdrawal."

Variations:

1. Modify the number of digits used for a money value at any given time. Ex: This time I want you create a 4-digit money value. ($45.83)
2. Specify that the value must have at least *x*-amount of zeroes included. Ex: Value must have at least three zeroes. Students will only roll three dice to find other digits and then arrange them. ($1,004.50) Continue process…
3. Specify certain digits in certain place value spots. Ex: You must have a 9 in the hundredths place and a 2 in the ones place. Students will only roll four dice to find other digits and then arrange them. ($7,852.19) Continue process…
4. Use more than two addends or subtrahends.
5. Use more than two addends or subtrahends while combining both "deposit" and "withdrawal". Ex: Roll. Arrange. Record. That is the amount in your bank account. You earned income and will deposit your next value. Roll. Arrange. Record. Add values. The weather is getting warmer so you decide to buy some new shorts, tank tops, and shoes. Your next value will be the total amount you paid while shopping. Please create the lowest 5-digit value you can with the numbers rolled.
6. Use any combination of the variations stated above based on the level of understanding amongst class.
7. *Advanced *(includes negative numbers)* – Complete the activity as if it is a running bank register with multiple deposits and withdrawals. Utilize any combination of the variations stated above.

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 1 Lesson 1 – Classroom Lesson
One per group

BLM 1 Pictures

deposit

withdrawal

budget

salaries

depósito

retiro

propuesto

sueldos

Duplicate on cardstock and cut apart for word cards.

balance

account

savings

credit

Duplicate on cardstock and cut apart for word cards.

saldo

cuenta

ahorros

crédito

Materials
- **BLM** Piggy Bank Story Problems
- scratch paper

Math Vocabulary
fraction
ratio
decimal
percent
interest
rate
equivalent

Literature Vocabulary
deposit
withdrawal
budget
salaries
balance
account
savings
credit

ELPS (*English Language Proficiency Standard*) 2B, 2D, 3B, 3C, 3D, 3H

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.B.2., I.C.1., I.C.2
ELA II.A.2., II.A.6., II.B.1, II.A.2.
MATH I.B.1., I.C.1., II.A.1., II.B.1., V.B.1., V.B.2., VIII.B.2

Teacher Note
It is crucial to keep mathematics imbedded in the real world. Be careful marking out sentences and only highlighting information that is needed for the solution. This type of "problem solving" strategy removes the math from its context. It is the context that helps us understand WHY the math works. Make sure students understand the story before removing it to make sense of the mathematics.

Unit 1, Lesson 1 — Grades 5-6

TV Lesson

Math Objectives:
- Use addition and subtraction to solve problems involving whole numbers and decimals.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Building Background
Students read and explored some of the banking concepts from the chosen section in ***Money Sense for Kids***. Explain that during the Math Lesson (TV Lesson) they will solve problems that include balancing bank accounts, deposits, withdrawals, savings, and budgets.

Comprehensible Input
Each problem on **BLM** Piggy Bank Story Problems is purposefully designed to practice different adding and subtracting strategies within a multistep situation. After the math lesson, students may choose which strategy they prefer to solve similar problem types.

Solution Process:
- Read
- Reread
- Visualize what's happening.
- Retell – Whole group discussion where students retell story in their own words. This is NOT a regurgitation of what's written on the page. They must explain the context in their own way.

  Example Retell of Problem #1: "Marinda was checking to see how much money she had in her bank account. The bank said she had a lot, but it wasn't showing the stuff she just bought. We need to find how much money she had left after she bought that stuff."

- Solution Strategy – Strategies purposefully vary for each problem on the **BLM**. Students need exposure and practice with different ways of thinking.

- Analyze final answer via elbow partner, small group, or whole group discussion. If a wrong answer *(especially a common wrong answer between students or groups)* comes up, take time to analyze WHY that answer is incorrect. There is equal importance in discussing what IT IS and what IT IS NOT.

Teacher Note
Allow students to pick which letter they use as a variable while working on problems during the summer. Not only is it fun for them, but it reiterates the fact that it doesn't matter what letter you use, it's just representing an unknown value. The math lessons will typically use *x*, but feel free to substitute with whatever the students choose.

Unit 1, Lesson 1 — Grades 5-6

TV Lesson - continued

Problem #1

Read. Reread. Students Retell. The purpose of this story problem is to walk students through the action of separating by subtracting each purchase from the starting dollar amount one-by-one.

Action:	separate
Equation:	$10,420.06 - $203.56 - $67.89 - $42.26 = *x*
Variable:	*x* represents the dollar amount after purchases
Strategy:	Subtract each expenditure one-by-one.

"How do you think we should solve this problem?" *(answers will vary)*

After students suggest different ways to solve, choose the strategy outlined above.

"Those are all great strategies and we'll even use some of them with the other problems. But I want us to solve Problem #1 one step at a time. Before we can solve for the problem we need to create an equation that describes what's happening in the story. What math sentence can we write that explains the events in the problem?"

Facilitate a quick conversation and have students write the equation with you as it's generated by their conversations. The sequence of events is very helpful in this endeavor.

"Why is it important to write an equation first?" *(so we understand what's happening in the problem)*

"Now that we understand what's happening in the problem and have a nice equation describing it, let's solve! I would like for us to take this step-by-step. What's the first thing we should do based on the equation we wrote?" *(Take away $203.56 from $10,420.06.)* Why? *(We know the bank wasn't showing any of those purchases, and that's the first thing she bought out of everything that day.)*

Solve the rest of the problem.

Questions to ask during solution process:

- What does that number represent?
- Why did we do that step?
- What's next? How do you know?
- How did building the equation help us solve?

Step 1	Step 2	Step 3
$10,420.06 - 203.56 10,216.50	$10,216.50 - 67.89 10,148.61	$10,148.61 - 42.26 10,106.35

"Are we done?" *(yes)* "How do you know we're finished?" *(Each purchase was subtracted from the total.)*

"What does $10,106.35 represent?" *(This is money she will have left in the bank after the three purchases finally go through, or how much money she actually has left over after the purchases.)*

Problem #2

Read. Reread. Students Retell. The purpose of this story problem is to show students a variation of the first strategy. They will find the total of all expenditures *(withdrawals)* first, subtract from the initial amount, and then proceed with division *(extra step not present in #1)*. This should be a simple equation to generate, however the proper way to represent halving the total difference will require explicit instructions. Parentheses are crucial.

Action: separate, fair-sharing

Equation: $\frac{(\$8337.24 - \$2549.60 - \$825.00 - \$2053.02)}{2} = x$

Variable: *x* represents the dollar amount deposited into savings

Strategy: find sum of all withdrawals, subtract from initial balance, half the remaining balance

Step 1	Step 2	Step 3
$2549.60 2053.02 + 825.00 5427.62	$8337.24 - 5427.62 2909.62	$\frac{\$2909.62}{2}$ = $1454.81

Questions to ask during solution process:

- What does that number represent?
- Why did we do that step?
- How are Problem #1 and #2 alike? Different?
- Could we have used this summation strategy on Problem #1?

Halving $2909.62 was not intended to involve a traditional division algorithm. Use partials to work through the division mentally.

Teacher Note
The symbolic representation for "halving" in this equation is a foreign concept for 5th grade. They will not have had experience showing that a sequence of operations must be grouped with parentheses when its final solution needs to be halved. (Texas Essential Knowledge and Skills does not require 5th grade students to learn the Order of Operations.)

"What is half of $2000?" *($1000)* Record.
"What is half of $900? *($450)* Record.
"What is half of $9?" *($4.50)* Record.
"What is half of $0.62?" *(31 cents)* Record. Combine partials WITHOUT laborious efforts.

Combine compatible partials $1000 + 450 + 4 = $1454.00
Deal with change $0.50 + 0.31 = $0.81
Answer is $1454.81. "What does that answer represent?" *(The amount of money they put into savings AND paid towards debt since they are equal values. But the question was regarding savings.)*

Problem #3

Read. Reread. Students Retell. The purpose of this story problem is to let students use one of the strategies learned in #1 and #2 but within a joining situation.

Action: joining and separating, comparing
Equation: ($25.00 + $89.42 + $247.13 + $192.00 - $250.00 + $326.00) = *x*
Variable: *x* represents total money after buying and selling
Strategy: Let students choose which strategy to use. *(Lesson will use the summation strategy.)* Find sum of all payments received, subtract bought item, then visually compare total to rent as the question does not ask students to calculate the difference of the new total and rent.

Step 1	Step 2	Step 3
$ 25.00 89.42 247.13 192.00 + 326.00 $879.55	 $879.55 - 250.00 $629.55	 Compare $629.55 ◯ $650.00

Questions to ask during solution process:

- What does that number represent?
- Why did we do that step?
- How are Problems #1 and #2 like this one? Different?
- Could we have used a different strategy to solve this problem? Where/when?

It is ideal to get through all three problem types during the lesson time frame. However, if students need more time they may continue this activity during the Follow-up.

Teacher Note
Variation for high ability groups: Have students treat this problem like a bank statement would. Initial balance of $25, add sold items amounts one at a time, subtract purchase, add resell item, THEN subtract rent. This will result in a negative number because Kyle does not have enough money. If a 5th grade student is placed in this group be aware that Texas Essential Knowledge and Skills does not require 5th grade students to solve problems involving negative numbers. It will be a new concept for them.

	Unit 1, Lesson 1 **Grades 5-6** **TV Lesson** - continued **----------** **Pirate's Corner** Introduce yourself to Captain Portio and the TV teacher online in MAS Space! We want to know all about you! Here are some things we'd like to know: • what state you're in • fun facts about your summer teacher • crops being harvested right now • your favorite thing about math • and anything else you'd like for us to know! **Objectives** Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 1 Lesson 1 – TV Lesson
Duplicate on cardstock and cut apart for word cards.

fraction

decimal

percent

interest

Unit 1 Lesson 1 – TV Lesson
Duplicate on cardstock and cut apart for word cards.

fracción
decimal
porcentaje
interés

rate

Unit 1 Lesson 1 – TV Lesson
Duplicate on cardstock and cut apart for word cards.

tasa

Unit 1 Lesson 1 – TV Lesson
One per group

Piggy Bank Story Problems

Work with your teacher and peers to answer the following questions. Use the back of this paper or scratch paper if you need more room to work.

- Marinda checked her bank statement online to make sure her calculations matched what the bank posted on the website. The bank said she had $10,420.06 in her account. But, Marinda just spent $203.56 at her favorite boutique, $67.89 at the grocery store for dinner, and paid a bill online that was $42.26. The bank had not posted those transactions yet. How much does Marinda actually have available in her account after the recent purchases?

- Tara and Jason have been staying on their budget for several months. Together they bring home $8,337.24 each month after taxes. $2,549.60 goes straight into the fund to pay bills. $825.00 is put into the personal fund that takes care of holidays, clothing, and entertainment. $2,053.02 is used to pay off car related bills and insurances. Half of the remaining balance will go into savings, and the rest is used to pay off debt. How much money did Tara and Jason deposit into the savings account this month?

- Kyle started selling some of his comic book figurines online to make some extra cash to pay rent. Hurricane Girl sold for $89.42, Super Martian Man topped the bidding war at $247.13, Mr. Titanium brought in $192.00. While managing the biddings he noticed someone was selling Arachnid Boy for $250.00 flat. He bought it quick and was able to turn around and sell it right back for $326.00. If Kyle started with $25.00 in his bank account, will he have the $650.00 he owes for rent after selling his figurines today?

Unidad 1 Lección 1 – Lección TV
Una por grupo

Problemas razonados de alcancía

Colabora con tu maestro y tus compañeros para responder las siguientes preguntas. Usa la parte posterior de este papel o papel borrador si necesitas más espacio para trabajar.

- Marinda revisó su estado de cuenta bancario en línea para asegurarse de que sus cálculos coincidían con lo que el banco publicó en su sitio web. El banco dijo que ella tenía $10,420.06 en su cuenta. Pero Marinda acababa de gastar $203.56 en su tienda de ropa favorita, $67.89 en la tienda de víveres para cenar, y pagó una factura en línea por $42.26. El banco aún no había publicado esas transacciones. ¿Cuánto dinero tiene Marinda realmente disponible en su cuenta después de sus compras recientes?

- Tara y Jason han estado cumpliendo con su presupuesto desde hace varios meses. Juntos ganan $8,337.24 al mes después de impuestos. $2,549.60 se destinan al fondo para pagar las cuentas. $825 van al fondo personal que usan para vacaciones, ropa y entretenimiento. $2,053.02 se usan para pagar facturas relacionadas con el carro y seguros. La mitad del saldo restante se destina a ahorros y el resto se usa para pagar deudas. ¿Cuánto dinero depositaron Tara y Jason en su cuenta de ahorros este mes?

- Kyle empezó a vender algunas de sus figuras de cómics en línea para ganar algo de dinero extra para el alquiler. Storm se vendió en $89.42, Superman alcanzó el límite en la subasta con $247.13, Iron Man obtuvo $192.00. Al organizar las subastas, notó que alguien estaba vendiendo a Spiderman por un precio fijo de $250.00. Lo compró rápidamente y pudo revenderlo de inmediato en $326.00. Si Kyle empezó con $25.00 en su cuenta bancaria, ¿tendrá los $650.00 que debe de alquiler después de vender hoy sus figuras?

Materials

- 6 deca-dice (10-sided numbered 0-9)
- 1 coin
- set of digit cards (if dice are not available)
- scratch paper

All items listed above per partner pair.

- **BLM** Money Mayhem Game Directions
- **BLM** Money Mayhem Record Sheet

Math Vocabulary

fraction
ratio
decimal
percent
interest
rate
equivalent

Literature Vocabulary

deposit
withdrawal
budget
savings
balance
earn
invest
finance

Teacher Note

Deca-dice are ideal for 5th – 6th grade because digits range from 0-9 as opposed to 1-6 on regular cube dice. (6-sided dice significantly limit the number choices and mathematical experiences in this activity.) If deca-dice aren't accessible, use the number cards provided. Print on card stock, cut out, and hide in paper lunch sack. Players choose 6 numbers at random instead of rolling dice.

Unit 1, Lesson 1 — Grades 5-6

Follow-up

Math Objectives:

- Use addition and subtraction to solve problems involving whole numbers and decimals.

Language Objectives:

- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

If students did not finish the questions during the TV Lesson they may do so during this time.

Practice and Application

Group students in partner pairs to play the game Money Mayhem. Directions provided on the **BLM** Money Mayhem. Players record their work and keep score in the chart on **BLM** Money Mayhem Record Sheet. Verification work is done on scratch paper only.

Extension variation: Groups may consist of four members. They will follow the same process but with four created dollar amounts instead of two. Heads on the coin flip will remain addition. However, Tails will mean students must skillfully pair two of the dollar amounts, subtract them, and then subtract those differences.

Example:
Player 1 rolls and creates $4898.01
Player 2 rolls and creates $2004.36
Player 3 rolls and creates $7456.91
Player 4 rolls and creates $0342.10

Player 1 decides to calculate
$7456.91 - $4898.01 = $2558.90 and
$2004.36 - $0342.10 = $1662.26.
Now he/she must find the difference of those two answers.
$2558.90 - $1662.26 = $896.64.

The digit in the tens-place in the Final Solution is how many points that Player earns for their work if correctly answered. Player One receives nine points for this example.

This is where "skillfully" choosing their equations comes in handy. This strategy will help build number sense and mental math skills.

ELPS (*English Language Proficiency Standard*) 2B, 2D, 3B, 3C, 3D, 3H

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR II.B.1., II.B.2., II.E.2.
ELA I.A.1., I.A.3., II.A.2., II.A.6., II.B.1
MATH II.A.1., II.B.1., II.C.1., VIII.B.1.

Teacher Note
Variation Suggestion:
For this game, points awarded are found in the tens-place. Change the place value spot each time they play the game. You can even change the place value spot in the middle of a game. "OK! Now you have to find your points in the hundredths-place!"

Unit 1, Lesson 1 — Grades 5-6

Follow-up - continued

Monitor students groups, stopping to ask thought provoking questions.

QUESTIONS

- Do you think your answer will be less/more than $1000? Why?
- Why did you arrange your numbers that way?
- Are you able to arrange your numbers in such a way to ensure you have a high digit in the tens-place? If so, what's your mental strategy?

Recursive Review
Please use **BLM** *to answer the Recursive Review questions.*

- Mallory deposited her $342.89 check in the bank. The new balance said $511.30. How much money did Mallory already have in her account?

Writing Topics
Independent Writing Topic
Students will have a daily writing activity which will incorporate the day's focus math vocabulary.

- **Explain how understanding place value, including decimals, helped you arrange your numbers in such a way that it ensured you would get the highest digit possible in the tens-place.**

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 1 Lesson 1 – Follow-up
One per group

Money Mayhem Game Directions

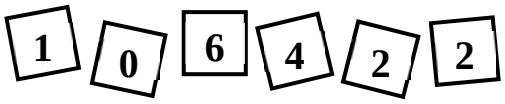
Materials:

- 6 deca-dice (10-sided dice labeled 0-9)
- 1 coin (with heads and tails)
- **BLM** Money Mayhem Record Sheet

Procedure:
The object of the game is to be the first player to make it to the top of the mountain. You advance on the arrow-led path by correctly creating a similar rectangle using the dimensions provided by a domino and a scale factor determined by the die.

- Player 1 rolls all six deca-dice and arranges them to create a dollar amount up to the thousands place, but not less than the hundreds place (if possible). Each die is used exactly once. Must include two decimal places (tenths, hundredths). Record number.
- Player 2 repeats first step. Record number.
- Player 1 flips coin. Heads = add, Tails = subtract.
- Both players calculate the (addition/subtraction) of the two dollar amounts created by the dice. (Player 2 is calculating to verify Player 1's answer. Use scratch paper for verification work.)
  Correct: Number in the tens-place of the Final Solution equals number of points awarded for work.
  Incorrect: Player receives one point (for effort).
- Play moves to Player 2. Repeat process.
- Highest score when class ends is the winner!

Ex:
Player 1 rolls dice shown in picture.
Arranges to make $6,024.12



Player 2 rolls dice shown in picture.
Arranges to make $8,331.95

Player 1 flips coin.
Heads = addition

Both players find the sum of the two dollar amounts. Player 1 correctly answers $14,356.07.

Number in the tens-place is 5, so Player 1 receives 5 points.

Roles reverse and play continues with Player 2.

Unidad 1 Lección 1 – Seguimiento
Una por grupo

Instrucciones del juego Confusión Monetaria

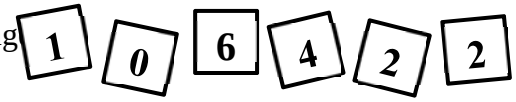
Materiales:

- 6 deca-dados (dados de 10 lados marcados del 0 al 9)
- 1 moneda (con cara y cruz)
- Hoja de registro de Confusión Monetaria **BLM**

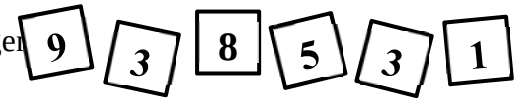
Procedimiento:
El objetivo del juego es ser el primer jugador en llegar a la cima de la montaña. Avanzas en el camino siguiendo las flechas creando correctamente un rectángulo similar usando las dimensiones dictadas por un dominó y un factor de escala determinado por el dado.

- El jugador 1 lanza todos los seis deca-dados y los acomoda para crear una cantidad de dólares hasta los miles, pero no menor de centenas (si es posible). Cada dado se usa exactamente una vez. Deben incluirse dos espacios decimales (décimas, centésimas). Anota el número.
- El jugador 2 repite el primer paso. Anota el número.
- El jugador 1 lanza la moneda. Cara = sumar, Cruz = restar.
- Ambos jugadores calculan la (suma/resta) de las dos cantidades de dólares creadas por los dados. (El jugador 2 calcula para verificar la respuesta del jugador 1. Usa papel borrador para hacer la verificación).
  Correcto: El número en el espacio de las decenas de la solución final es el número de puntos otorgados por el trabajo.
  Incorrecto: El jugador recibe un punto (por su esfuerzo).
- El turno pasa al jugador 2. Repite el proceso.
- ¡Quien tenga más puntos al final de la clase es el ganador!

Ejemplo:
El jugador 1 obtiene los dados mostrados en la imag
Los ordena para formar $6,024.12



El jugador 2 obtiene los dados mostrados en la image
Los ordena para formar $8,331.95



El jugador 1 lanza la moneda.
Cara = suma

Ambos jugadores calculan la suma de las dos cantidades de dólares. El jugador 1 responde correctamente $14,356.07.

El número en el espacio de las decenas es 5, así que el jugador 1 recibe 5 puntos.
Los papeles se invierten y el juego continúa con el jugador 2.

Unit 1 Lesson 1 – Follow-up
One set of 60 digit cards per group

Digit Cards

0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9

Unit 1 Lessons 1-3 – Follow-up
One per partner pair

Money Mayhem Record Sheet

Record work on this handout while playing game.

	Player 1 work	points	Player 2 work	points
Turn 1				
Turn 2				
Turn 3				
Turn 4				
Turn 5				
Turn 6				
Turn 7				
Turn 8				
Turn 9				
Turn 10				
Total Points				

Unit 1 Lessons 1-3 – Follow-up
One per partner pair

Confusión monetaria ficha de trabajo

Record work on this handout while playing game.

	Trabajo de jugador #1	puntos	Trabajo de jugador #2	puntos
Turno 1				
Turno 2				
Turno 3				
Turno 4				
Turno 5				
Turno 6				
Turno 7				
Turno 8				
Turno 9				
Turno 10				
Total Points				

Unit 1 Lessons 1-3 – Follow-up
One per student

Recursive Review Problems

Solve the recursive review problems using any strategy of your choice.

Unit 1 Lesson 1
Mallory deposited her $342.89 check in the bank. The new balance said $511.30. How much money did Mallory already have in her account?

Unit 1 Lesson 2
Clarity timed herself running the 400 meter dash during track practice. Her times were 80.46 seconds, 78.3 seconds, 79.16 seconds, and 81.05 seconds. She was keeping a log of her time spent running. What was her total running time for today's track practice?

Unit 1 Lesson 3
If Jenny can fit 13 cupcakes into 1 box, how many boxes will she need to pack 91 cupcakes? Use a ratio table to solve this problem.

Unidad 1 Lecciones 1-3 – Seguimiento
Una por estudiante

Problemas de repaso recursivo

Resuelve los problemas de repaso recursivo usando la estrategia que desees.

Unidad 1 Lección 1
Mallory depositó su cheque por $342.89 en el banco. El nuevo saldo decía $511.30. ¿Cuánto dinero ya tenía Mallory en su cuenta?

Unidad 1 Lección 2
Clarity se tomó el tiempo al correr los 400 metros durante la práctica de atletismo. Sus tiempos fueron 80.46 segundos, 78.3 segundos, 79.16 segundos y 81.05 segundos. Llevó un registro del tiempo que pasó corriendo. ¿Cuál fue el tiempo total que corrió en la práctica de atletismo de hoy?

Unidad 1 Lección 3
Si Jenny puede colocar 13 pastelillos en 1 caja, ¿cuántas cajas necesitará para empacar 91 pastelillos? Usa una tabla de relaciones para resolver este problema.

Materials
- 1 large apple
- 2 paper dessert plates
- 2 napkins
- 1 plastic knife

All items listed above per partner pair
- **BLM** Apple-Snack Fractions
- **BLM** Apple-Snack Fractions Teacher Guide

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents.
- Convert between fractions, decimals, and percents.
- Estimate to find solutions to problems involving fractions, decimals, and percents.

Language Objectives
- Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.

Math Vocabulary
fraction
ratio
decimal
percent
interest
rate
equivalent

Literature Vocabulary
deposit
withdrawal
budget
(add more)

Unit 1, Lesson 1 — Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Snack Fractions
As part of each math day, please include a quick "Snack Fraction" activity. If your district/school does not allow any snacks to be given to students, please alter the activity by providing a paper shape to be divided into fractional parts.

Tell students that each day you will have them share snacks with partners or small groups.

Today, you are going to walk through the activity with them so they understand the format for the rest of the snack fraction activities for this unit. Once students understand the routine for this activity, you may stop modeling and proceed to monitoring or pulling small groups for one-on-one remediation. A Teacher Guide for the BLM is provided for this first lesson.

QUESTIONS
- What is the whole in this situation?
- How do I break this up into equal shares?
- What does that fraction represent?
- Does this fraction have an easily calculated decimal equivalent?
- How can you find the decimal of this fraction?

Once the activity is complete, let them enjoy their snack!

Snack Fraction Journal Writing: BLM Apple-Snack Fractions
Explain the relationship between your portion when shared with your partner and your portion after cutting it into thirds to share with your brothers.

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 1 Lesson 1 – Snack Fractions
One per student

Apple – Snack Fractions

Divide your snack equally between the two of you. Work with your partner to solve the problems.

1. What fraction represents your portion out of the whole? _____
   Equivalent decimal? _____

2. Your little brother wants to share your portion. Using a picture and numbers show what fraction represents your new portion out of the whole? _____
   Equivalent decimal? _____

3. What fraction represents your new portion compared to your original portion?

4. How do your fraction answers for questions 2 and 3 relate to one another mathematically? Draw a picture to model the relationship.

5. Oh! Your little brother's twin walked in and wants to share your apple before you cut it. Draw a picture to model how you will divide your original portion to share it with your 2 little brothers.

   Fractional representation of your new portion out of the whole? _____

6. How does your new portion compare to your original portion and how does it relate to your answer for #5?

Unidad 1 Lección 1 – Fracciones de refrigerios
Una por estudiante

Manzana - Fracciones de refrigerio

Divide tu refrigerio de manera equitativa entre los dos. Colabora con tu compañero para resolver los problemas.

7. ¿Qué fracción representa tu porción del entero? _____

   ¿Decimal equivalente? _____

8. Tu hermanito quiere que compartas con él tu porción. Usando una imagen y números muestra, ¿qué fracción representa tu nueva porción del entero?

   _____

   ¿Decimal equivalente? _____

9. ¿Qué fracción representa tu nueva porción comparada con tu porción original?

10. ¿Cómo se relacionan matemáticamente entre sí tus respuestas en fracciones a las preguntas 2 y 3? Dibuja una imagen para modelar la relación.

11. ¡Oh! El hermano gemelo de tu hermanito acaba de entrar y quiere que compartas tu manzana antes de que la cortes. Dibuja una imagen para modelar cómo dividirás tu porción original para compartirla con tus 2 hermanitos.

    ¿Representación en fracciones de tu nueva porción respecto al entero?

    _____

12. ¿Cómo se compara tu nueva porción con tu porción original y cómo se relaciona con tu respuesta a la pregunta 5?

Unit 1 Lesson 1 – Snack Fractions
Teacher copy

Apple – Snack Fractions Teacher Guide

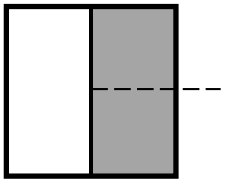
Divide your snack equally between the two of you. Work with your partner to solve the problems.

1. What fraction represents your portion out of the whole? **$\frac{1}{2}$**

   Equivalent decimal? **0.50**

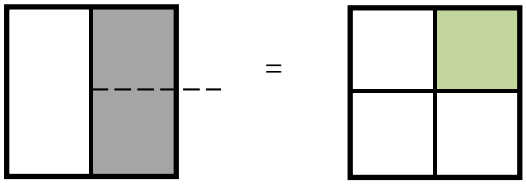
2. Your little brother wants to share your portion. Using a picture and numbers show what fraction represents your new portion out of the whole? **$\frac{1}{4}$ of whole**

   Equivalent decimal? **0.25**

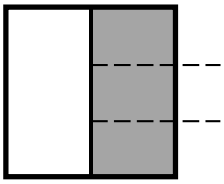


3. How does your new portion compare to your original portion? **$\frac{1}{2}$ of a $\frac{1}{2}$**

4. How do your fraction answers for questions 2 and 3 relate to one another mathematically? Draw a picture to model the relationship.
   (Half of a half) is equal to a fourth.



5. Oh! Your little brother's twin walked in and wants to share your apple before you cut it. Draw a picture to model how you will divide your original portion to share it with your 2 little brothers.

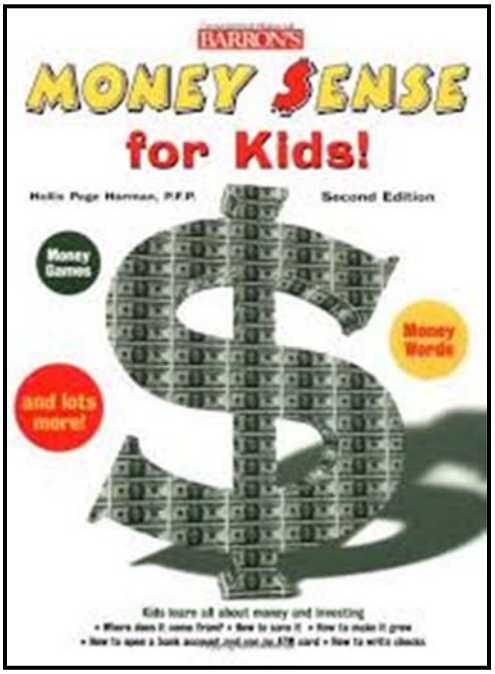


   Fractional representation of your new portion out of the whole? **$\frac{1}{6}$ of whole**

6. How does your new portion compare to your original portion and how does it relate to your answer for #5? **$\frac{1}{3}$ of $\frac{1}{2}$ which equals $\frac{1}{6}$ from question #5**

Unit 1 Lesson 1 – Family Fun

Dear _____,



We read part of the book ***Money Sense for Kids*** in class today.

It was about…

_____
_____
_____
_____
_____
_____

One of the math concepts we used from the book was…

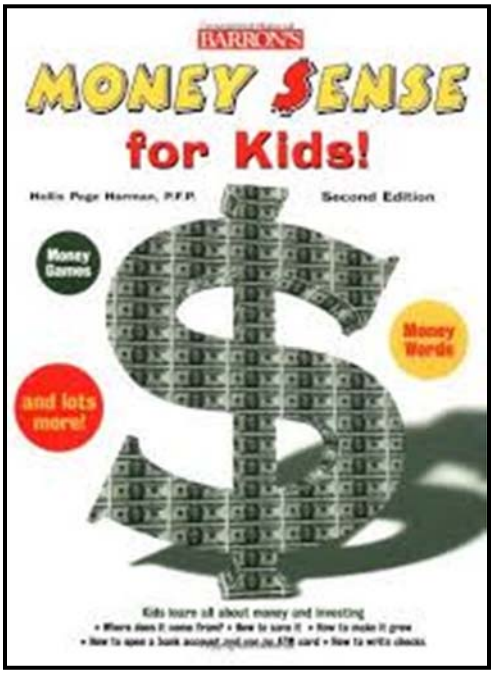
_____
_____
_____
_____
_____
_____

Sincerely,

_____

Unit 1 Lesson 1 – Family Fun

Dear _____,



Leímos parte del libro ***Money Sense for Kids*** en la clase hoy.

Es sobre…

_____
_____
_____
_____
_____
_____

Uno de los conceptos matemáticos que aprendimos del libro es…

_____
_____
_____
_____
_____
_____

Atentamente,

_____

Materials
- **BLM** Perimeter Pandemonium (1of2)-Measurement Lab Record Sheet
- **BLM** Polygon Options
- **BLM** Solve It! Problems 1-2
- **BLM** Fraction Action and *X* Marks the Spot
- **BLM** Lessons 2-3 CGI ***Money Sense for Kids***

Math Objectives
- Solve problems using a measurement tool and calculating measurements.
- Model and solve multistep word problems.
- Solve problems involving fractions, ratios, and proportions.
- Solve for a variable.
- Compose and decompose numbers.

Language Objectives
- Speak to partners, teacher, and class using vocabulary.
- Discuss problem solving process and strategies. Explain how they decided to rename the target number.

Math Vocabulary
fraction
ratio
decimal
percent
interest
rate
equivalent

Literature Vocabulary
deposit
withdrawal
budget
salaries
balance
account
savings
credit

Assessed TEKS for this Unit
5th – 5.3H, 5.3K
6th – 6.4C, 6.4E, 6.5B

Unit 1, Lesson 2 — Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post-assessment. They are not optional.

ESSENTIAL

Measurement Lab (5th assessment items 1,2,6)
- Lesson 1 – *omit*
- **Lesson 2 – Perimeter Pandemonium (1 of 2)**
- Lesson 3 – Perimeter Pandemonium (2 of 2)

Lesson 2 Materials
- ruler (cm)
- 4 different polygons *(options are provided on BLM)*

Lesson 2 Student Groups
The sizes of the polygons on the BLM are NOT intended for the activity. Please enlarge the shapes to various sizes on a copy machine.

1) measure side lengths of each polygon to nearest half-centimeter
2) record dimensions on BLM
3) calculate perimeter of each polygon

Solve It! Multi-step problem solving (5th grade assessment items 4,5)
- Lesson 1 – *omit*
- **Lesson 2 – pairs, 2-step**
- Lesson 3 – independent, 2-step

Fraction Action
- Lesson 1 – *omit*
- **Lesson 2 – (5th grade assessment item 6)**
- Lesson 3 – (5th grade assessment 1,2,3,4,5,6)

***X* Marks the Spot**
- Lesson 1 – *omit*
- **Lesson 2 – (5th grade assessment items 4,5)**
- Lesson 3 – (5th grade assessment items 1,2,3)

CGI
- Lesson 1 – *omit*
- Lesson 2 – Compare Referent Unknown (5th grade assessment item 5)
- **Lesson 3 – Price Partitive Division (6th grade assessment item 6)**

ELPS (*English Language Proficiency Standard*) 2A, 2B, 2C, 4C, 4J,5D **CCRS** *(College and Career Readiness Standards)* CROSS-CURRICULAR I.A.1., I.C.2., I.C.3., II.D.1 ELA III.A.1., III.B.2., IV.A.3 MATH II.A.1., II.A.2., II.D.1., VI.C.2., IX.A.1., IX.A.3	**Unit 1, Lesson 2** **Grades 5-6** **Daily Routine** - continued **----------** **The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.** **----------** **OPTIONAL** **Target Number** • Lesson 1 – *omit* • **Lesson 2 – Target Number 12** • Lesson 3 – Target Number 24 **Money Matters** (*If you have a full program and wish to use this optional activity, you will find BLMs and Explanations on MAS Space*.)

Unit 1 Lesson 2 – Daily Routines – Measurement Lab
One per student

Perimeter Pandemonium (1 of 2) – Measurement Lab Record Sheet

Students should work in small groups (no more than four).

Materials:

- ruler (cm)
- 4 different polygons

Task:

- Write the mathematical name of the polygons you will measure in the left column of the chart below. (Example: scalene triangle, irregular octagon, regular hexagon, etc.)
- Sketch a picture of the polygon you are measuring.
- Record the number of sides.
- Measure side lengths of each polygon to nearest half-centimeter. Use a mixture of decimals and fractions.
- Label corresponding sides on sketch in chart.
- Calculate the perimeter of each polygon.

	draw shape	**# of sides**	**calculate perimeter**	**perimeter**
Shape 1:				
Shape 2:				
Shape 3:				
Shape 4:				

Unidad 1 Lección 2 – Rutinas diarias – Laboratorio de medición
Una por estudiante

Pandemonio de perímetros (1 de 2) - Hoja de registro del laboratorio de medición

Los estudiantes deben trabajar en grupos pequeños.

Materiales:

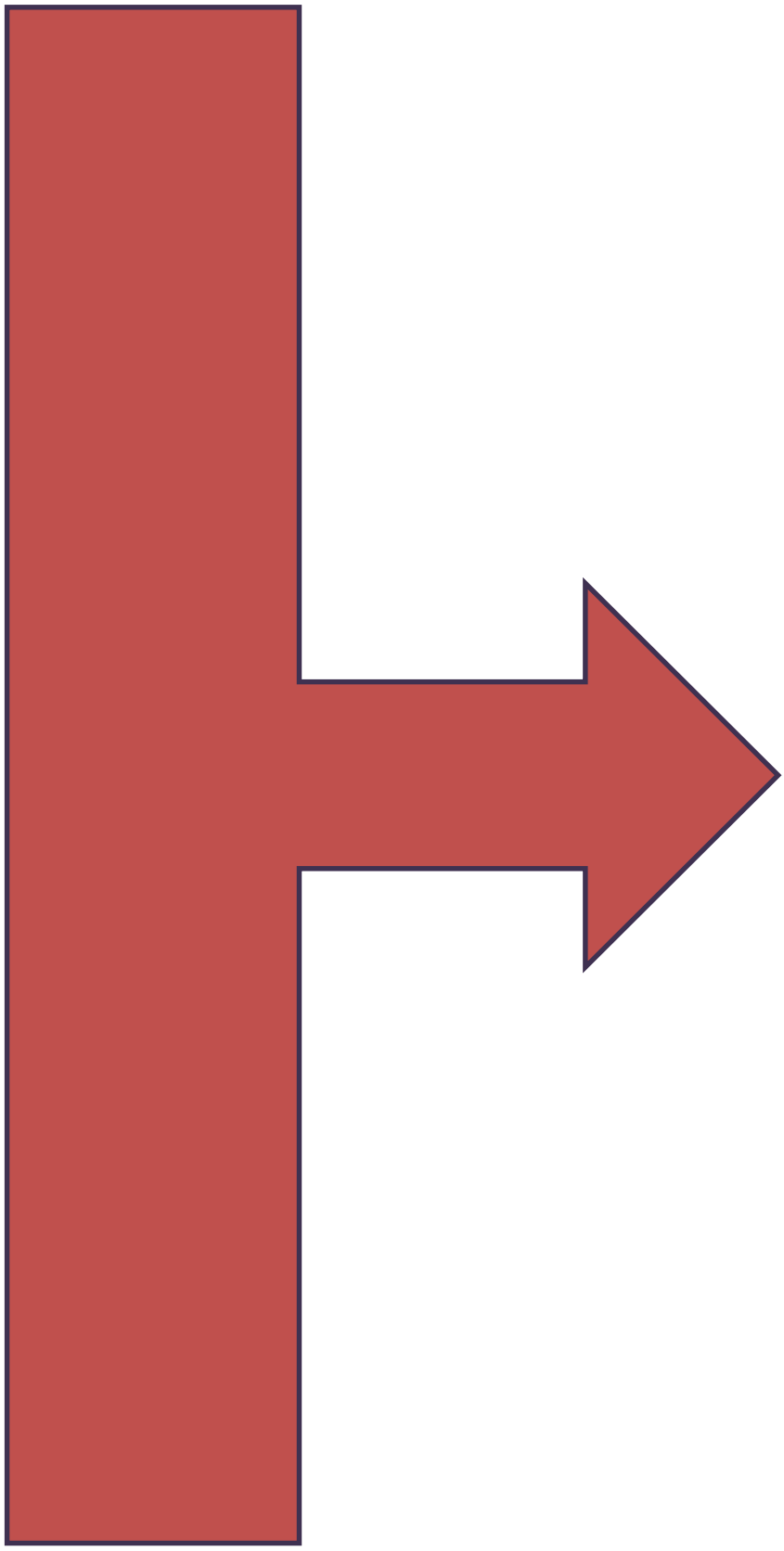
- regla (cm)
- 4 polígonos diferentes

Tarea:

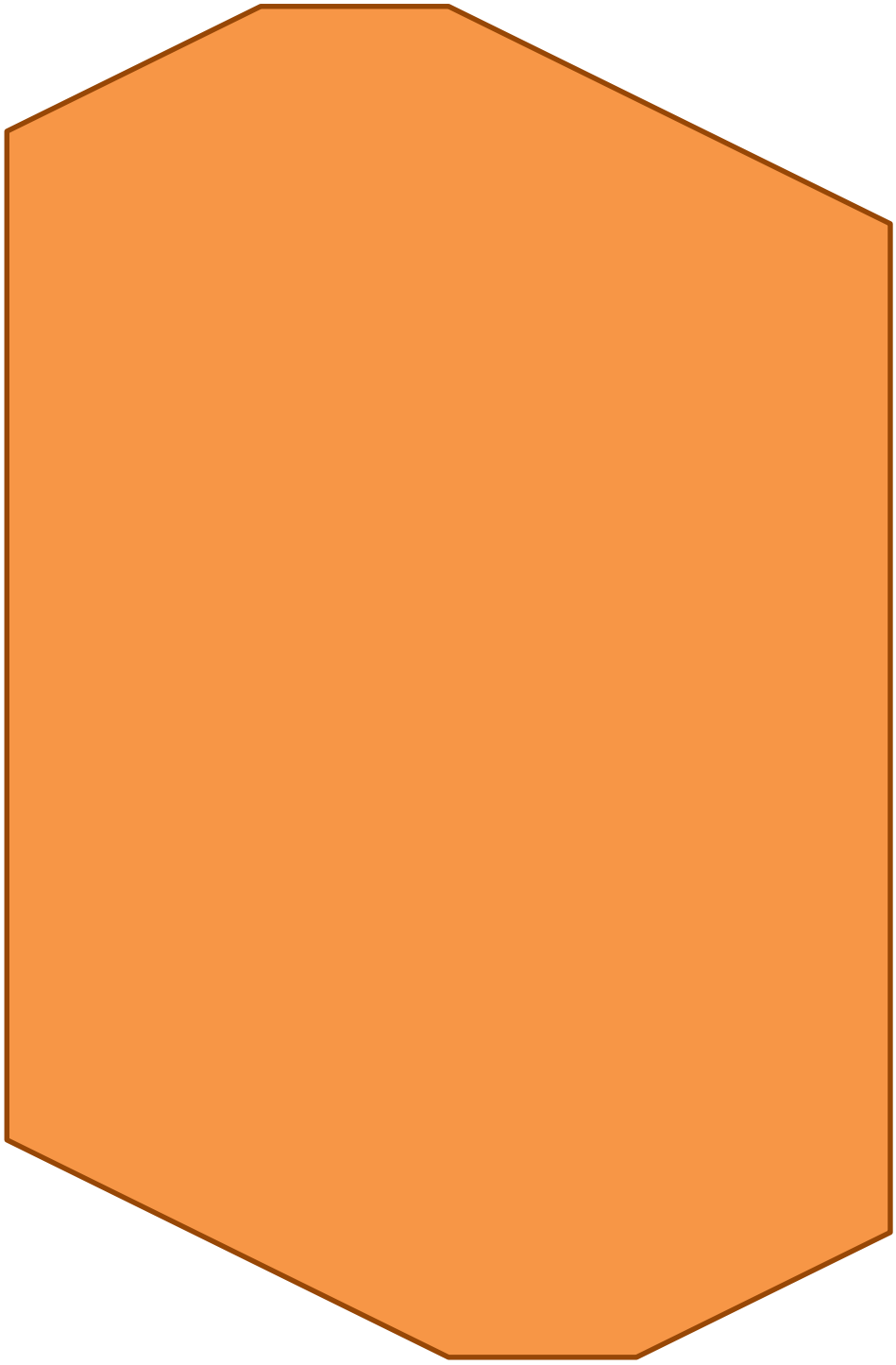
- Escribe el nombre matemático de los polígonos que medirás en la columna izquierda de la tabla siguiente. (por ejemplo: triángulo escaleno, octágono irregular, hexágono regular, etc.)
- Haz un boceto del polígono que vas a medir.
- Registra el número de lados.
- Mide la longitud de los lados de cada polígono redondeando a mitades de centímetro. Usa una mezcla de decimales y fracciones.
- Etiqueta los lados correspondientes en el boceto de la tabla.
- Calcula el perímetro de cada polígono.

	Dibuja la forma	**# de lados**	**Calcula el perímetro**	**perímetro**
Forma 1:				
Forma 2:				
Forma 3:				
Forma 4:				

Polygon Options (p. 1 of 6)



Polygon Options (p. 2 of 6)



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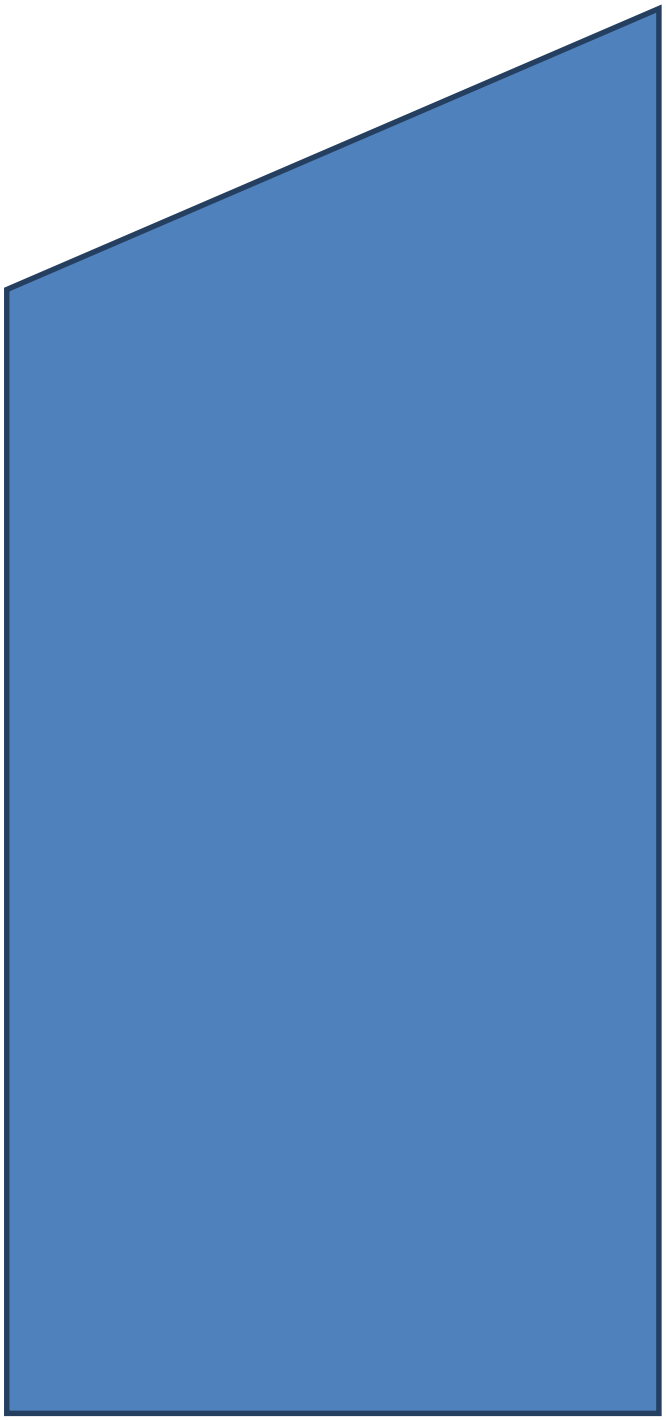
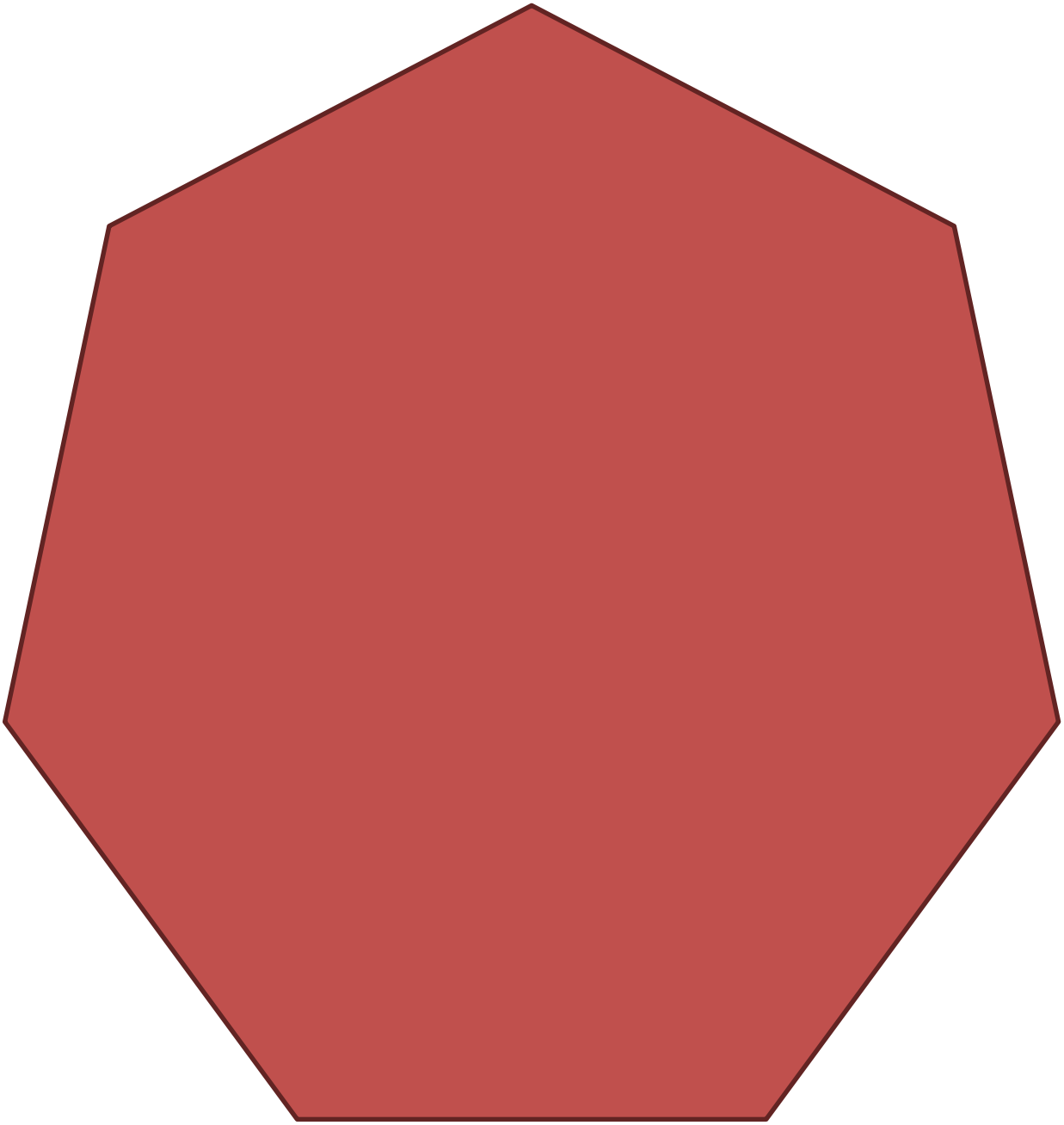
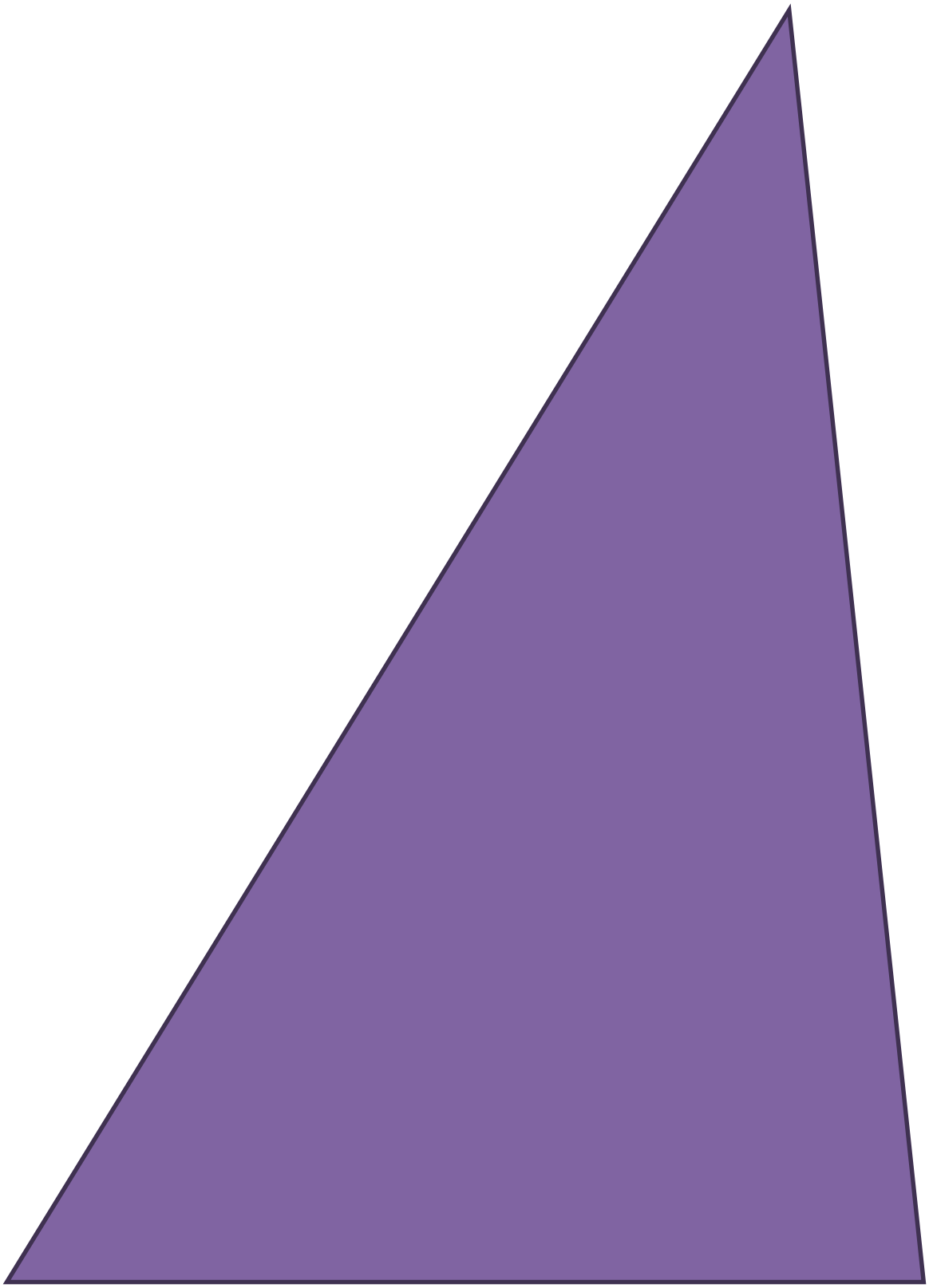


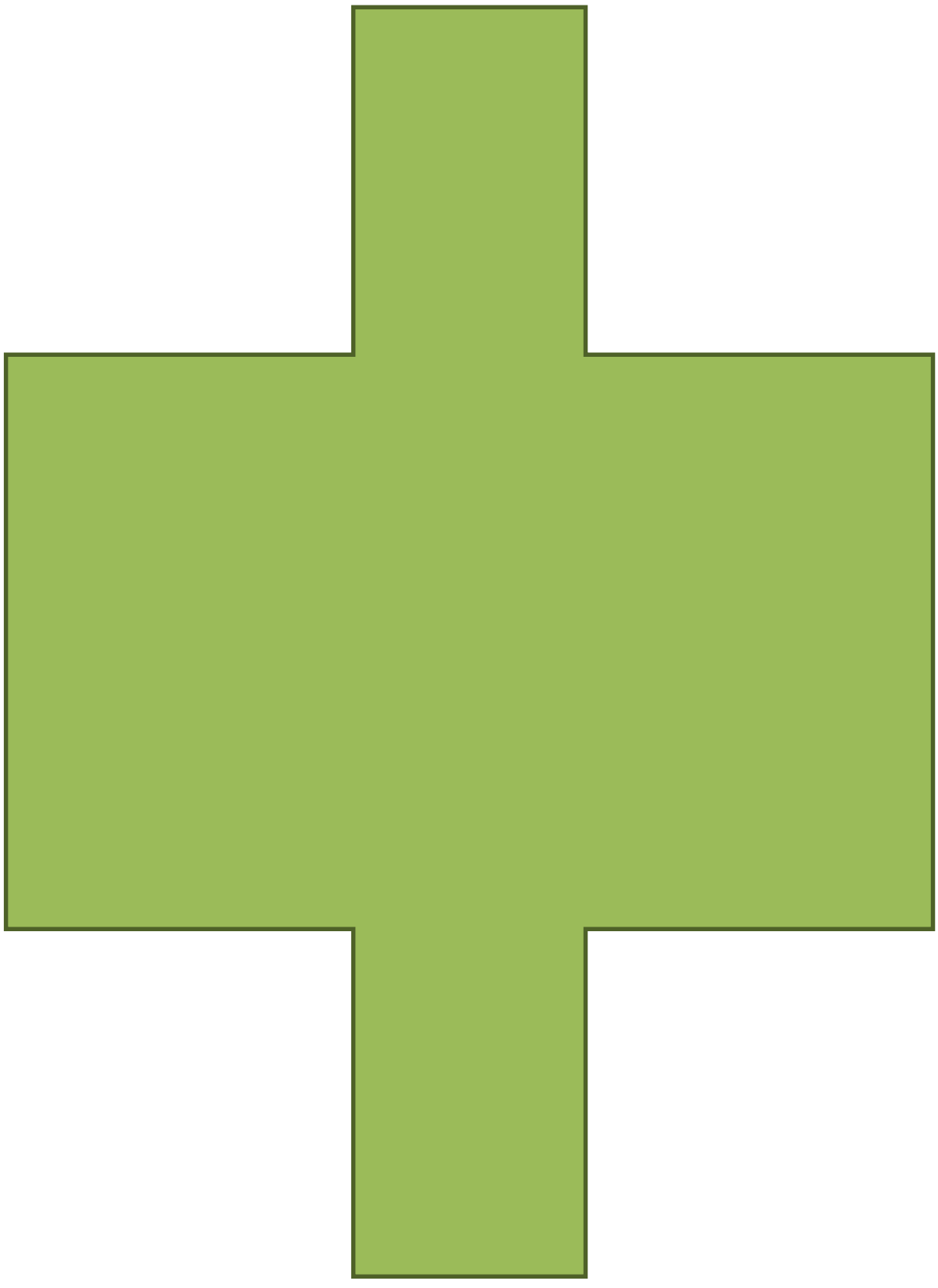
Polygon Options (p. 4 of 6)



Polygon Options (p. 5 of 6)



Polygon Options (p. 6 of 6)



Unit 1 Lesson 2 – Daily Routines – Solve It! (pairs)
One per partner pair

Problem 3:
Fred's Funny Farm is a fun family petting zoo. He didn't have very many animals when he started so it only cost him $378.49 the first month to feed them. The kids who visited loved the bunnies and goats the best. Fred decided to buy a few more of each and it raised his food bill the next month to $455.13. His business kept growing so he purchased a few more mini-horses and a family of geese. His food expense went up $238.05 from last month. How much did Fred spend in those three months feeding his animals?

Step 1 – Name:	Verification – Name:
Step 2 – Name:	Verification – Name:
Final Solution – Name:	Verification – Name:

Unit 1 Lesson 2 – Daily Routines – Solve It! (pairs)
One per partner pair

Partner #1 - Problem 3:
Compañero # 1 - Problema 3:
La Granja Divertida de Fred es un divertido zoológico interactivo familiar. Él no tenía muchos animales cuando inició, así que alimentarlos sólo le costó $378.49 el primer mes. A los niños que lo visitaron les gustaron los conejos y las cabras más que cualquier otra cosa. Fred decidió comprar algunos conejos y cabras más y esto elevó su factura de comida del próximo mes a $455.13. Su negocio siguió creciendo, así que compró algunos caballos miniatura más y una familia de gansos. Su gasto en comida subió en $238.05 respecto al mes anterior. ¿Cuánto gastó Fred en alimentar a sus animales en esos tres meses?

Paso 1 – Nombre:	Verificación – Nombre:
Paso 2 – Nombre:	Verificación – Nombre:
Solución final – Nombre:	Verificación – Nombre:

Unit 1 Lesson 2 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

Materials:
None for this activity

Task:
Tina needed 3.25 cups of flour to make the base of her broccoli cheddar soup. She could only find her $\frac{1}{2}$ cup measuring cup. Draw a picture showing how many scoops of flour she will need to equal the amount the recipe calls for?

X Marks the Spot

Solve for *x*.

$79.488 + x = 460.7$

Unidad 1 Lección 2 – Rutinas diarias – Acción con fracciones y *X* marca el sitio
Una por estudiante

Acción con fracciones

Materiales:
Ninguno para esta actividad

Tarea:
Tina necesitó 3.25 tazas de harina para hacer la base de su sopa de brócoli y cheddar. Sólo pudo encontrar su taza de medir de $\frac{1}{2}$ tazas. Haz un dibujo mostrando cuántas veces deberá llenar su taza para medir la cantidad que pide la receta.

X marca el sitio

Resuelve para *x*.

$79.488 + x = 460.7$

Unit 1 Lesson 2-3 – Daily Routines - CGI – *Money Sense for Kids*
One per student

	Multiplication	Measurement Division	Partitive Division
Grouping and Partitioning	Anita put __ away in her Short Term money jar every week for __ weeks. How much did she have in the jar then? ($9.50, 5) ($11.25, 6)	Anita had ___. She wanted to give several charities ___ each. How many charities could she donate to? ($45.00, $15.00) ($70, $17.50)	Anita had ___ dollars she wanted to divide equally among her ___ money jars. How much should she put in each jar? ($363, 3) ($366, 6)
Rate	Margo worked in a bakery. She could knead a loaf of bread every __ minutes. At that rate, how long would it take her to knead __ loaves of bread? (10, 5) (7, 8)	Margo worked in a bakery. She could knead __ loaves of bread in one hour. At that rate, how long did it take them to knead __ loaf(ves) of bread? (7, 1) (7, 2) (9, 3)	Margo worked in a bakery. She could knead __ loaves of bread in 40 minutes. At that rate, how many loaves could she knead in __ minutes? (8, 5) (5, 20) (4, 30)
Price	Eloy bought 7 pounds of white fish for $2.50 a pound. How much did he pay for the fish?	Eloy paid $21.77 for fish that cost $7 a pound. How many pounds of fish did he buy?	Eloy paid a total of $45 for 15 pounds of shrimp. How much did he pay a pound for the shrimp?
Fractions	Sammy and his 3 friends had each eaten personal sized pizza for lunch. Each had one-sixth of his pizza leftover. If they put their leftovers together, how much pizza would they have?	Sammy wanted to make pizza dough. The recipe called for $\frac{1}{2}$ cup flour per pizza. If Sammy had 5 cups of flour, how many pizzas could he make?	Sammy's recipe for pizza called for 3/4 cup sausage per pizza. If Sammy could make 8 pizzas, how many cups of sausage did he have?

Unit 1 Lesson 2-3 – Daily Routines - CGI – *Money Sense for Kids*
One per student

	Multiplicación	**División de medidas**	**División partitiva**
Agrupamiento/ División	Anita guardó ____ en su alcancía a corto plazo cada semana durante ____ semanas. ¿Cuánto dinero tenía en la alcancía entonces? ($9.50, 5) ($11.25, 6)	Anita tenía _____. Anita quería hacer donativos a varias organizaciones benéficas a razón de $15 cada una. ¿A cuántas organizaciones benéficas pudo donar? ($45.00, $15.00) ($70, $17.50)	Anita tenía ___ dólares que quería dividir igualmente entre _____ alcancías. ¿Cuánto dinero puede poner en cada alcancía? ($363, 3) ($366, 6)
Cociente	Margo trabajaba en una repostería. Podía amasar una barra de pan cada _____ minutos. A tal razón, ¿cuánto tiempo le tomaría amasar ____barras de pan? (10, 5) (7, 8)	Margo trabajaba en una repostería. Podía amasar ____ barras de pan en una hora. A tal razón, ¿cuánto tiempo le tomaría amasar _____barra(s) de pan? (7, 1) (7, 2) (9, 3)	Margo trabajaba en una repostería. Podía amasar _____barras de pan cada 40 minutos.A tal razón, ¿cuántas barras de pan podía amasar en _____ minutos? (8, 5) (5, 20) (4, 30)
Precio	Eloy compró 7 libras de pescado blanco a $2.50 la libra. ¿Cuánto pagó por el pescado?	Eloy pagó $21.77 por pescado que cuesta a $7 la libra. ¿Cuántas libras de pescado compró?	Eloy pagó un total de $45 por 15 libras de camarones. ¿Cuánto pagó por libra de camarones?
Fracciones	Sammy y sus 3 amigos habían comido pizzas individuales para el almuerzo.A cada uno de ellos le sobró una sexta parte de su pizza. Si juntaran sus sobras, ¿qué cantidad de pizza tendrían?	Sammy quería hacer masa de pizza. La receta llevaba ½ taza de harina por pizza. Si Sammy tenía 5 tazas de harina, ¿cuántas pizzas pudo hacer?	La receta de pizza que Sammy usó llevaba ¾ de taza de chorizo por pizza. Si Sammy pudo hacer 8 pizzas, ¿cuántas tazas de chorizo usó?

Materials
- 4 unlined sheets of paper for each student
- pencils
- Dictionary or online dictionary resource
- Collection of newspapers and/or magazines where students may find different types of rates and ratios

Literature Selection
Money Sense for Kids
by Hollis Page Harman, PFP
(Earn It p.61 and Grow It p. 85)

Math Vocabulary
fraction
ratio
decimal
percent
interest
rate
equivalent

Literature Vocabulary
deposit
withdrawal
budget
salaries
balance
account
savings
credit

ELPS (*English Language Proficiency Standard*) 2D, 2H, 3C, 4E, 4F, 4J, 4K

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR II.A.4., II.A.5., II.A.6
ELA II.A.2., II.A.3., II.A.4., III.B.2

Technology Option
If a classroom dictionary is unavailable, then utilize www.wordsmyth.net

Teacher Note

Unit 1, Lesson 2 — Grades 5-6

Classroom Lesson

Every day teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

Math Objectives:
- Represent ratios and percents with concrete models, fractions, and decimals

Language Objectives:
- Use vocabulary words from the text in an illustration, a definition, and a contextualized sentence.
- Analyze cause and effect relationships from the book.

BEFORE READING

Building Background: Vocabulary

Tell students that today you will guide them in further clarification of the vocabulary words they located in yesterday's lesson by creating a 4-corners vocabulary chart.

Direct the students in folding an unlined sheet of paper into fourths as the model to the left demonstrates. Once the paper is folded, have the students keep the paper folded *(model with your own sheet)* so that only the first block is viewable. We will begin with the top left corner *(corner 1)*, then move down to corner 2, and so forth. Direct students to write the number 1 in the upper left corner of the box.

Teacher: We will complete this 4-corners chart together using the vocabulary word *salaries.*

Comprehensible Input: Vocabulary

Model and Practice utilizing the text and other resources to support the information in the corners.

Corner 1

Model: Guide students through the page you remember from yesterday that had the vocabulary word. Locate the sticky note above the vocabulary word. Reread the title of the chart on p.65 and think aloud the thought process from lesson 1 to review what salaries means. Say, "Hmmm…when I look at the chart I notice dollar amounts listed to the right of professions. This makes me think of someone giving money to someone or receiving a paycheck. This amount is a lot of money, so the money might be in the form of a check."

Four Corners Vocabulary Model

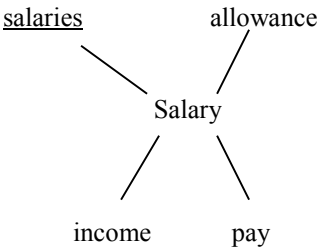
illustration 1	sentence 3
definition 2	vocabulary word 4

Illustration Option:

Definition Option:
Salary: A fixed amount of money paid at regular times for work a person has done. (from Latin Salt, meaning "an allowance given to soldiers to buy salt." In the past, salt was often expensive and difficult to obtain.)

Sentence Option:
I receive a salary at the end of each month for the work I have completed.

Vocabulary Word Option:



Share your personal experience of receiving a paycheck bi-weekly or monthly. Say, "I think a good picture would be of someone giving money to another. Let's illustrate that."

- Practice: Encourage students to draw a quick picture of perhaps a hand holding money and giving it to another person. *(Option: the illustrations are to be simple. Any depiction that suits the meaning of the word used in the text is acceptable.)*

Corner 2

- Model: In this corner, I will write a brief definition and tell any additional information that will help me remember what *salaries* means.
  Model looking through the dictionary or online to locate a simple definition. Clarify any words or use alternate word in the definition as necessary to keep it simple. Using Wordsmyth online will also give you the origin of the word.
- Practice: Guide students to copy your definition. Encourage them to change words if it clarifies the meaning further for them.

Corner 3

- Model: This is my favorite corner because I can be creative in writing. In this corner, I will write my own sentence using the vocabulary word *salaries*. I want to write a sentence that relates to the job I do. I am paid for work I have done once a month, so I receive a salary. *Salary* is the base word of salaries. *Salaries* mean more than one. I will use the word *salary* in my sentence since I will be speaking about one person, myself.
  Use the sentence option, or create your own. Model rereading the sentence to make sure it makes sense. A meaningful sentence will contain information from the definition.
- Practice: Encourage students to create their own sentence or they may copy your sentence.

Corner 4

- Model: The fourth corner is for writing the vocabulary word and any related words. Earlier in my sentence I used the base word *salary*. This is a related word. What are other related words from the base word *salary*? Discuss some possible words or synonyms. Since salary is the base word we will write it in the center of the box and connect the related words to it. *Salaries* is our vocabulary word, so I will underline it.
  Utilize the option to the left as a support or use other suitable words the students assist in generating. You may also go back to the dictionary or online resource.
- Practice: Allow students to complete their fourth corner. Ensure they underline the vocabulary word.

Unit 1, Lesson 2 — Grades 5-6

Classroom Lesson - continued

Once all four corners are completed, direct students to unfold the paper. This becomes a useful tool for word study. The students need to keep this paper at their table/desks to use as a model.

Teacher: Now that you have created a four corners chart with salaries, you will create one with your partner for three more words.

- deposit
- withdrawal
- balance

Practice and Application: Vocabulary

While students work with a partner on this activity, you can meet with a small group of beginning ELLs to create the Four Corners chart collaboratively. For the sentence corner, model how to use the word in a sentence, and write the sentence down so they can see it. Have your ELLs create a similar sentence based on your model.

Have students share their words with one another by lining up into two equal lines facing one another. Students, facing one another, take turns sharing the word *deposit*. After a specified time determined by the teacher, the line on the left of the teacher moves one person to the right. Student who is displaced at the head of the line walks to the end of the same line to share with the person in the opposite line. ONLY ONE LINE MOVES. After several students sharing *deposit*, have students share what they wrote for *withdrawal* and then *balance*.

Building Background: Literature

Teacher: In lesson 1, we discovered cause and effect relationships in the book. What is a cause? Allow for answers.

Restate that a cause is an event that makes something else happen. Out of the two events it is the one that happened first.

Teacher: What is the effect? Allow for answers.

Restate that an effect is the result of what happens from the cause. Out of the two events it's the one that happens second or last.

Show students the T- chart they worked with in Lesson 1 and review which side is the cause and the effect:

cause	effect
more experience	charge more
responsible worker	more jobs
two jobs in one day	make twice as much money
bank lends money at a higher interest	the bank makes money
bank pays you interest	you make money
fill out a new accounts form	bank gives you an account
make a deposit into your account	total amount in your account increases
make a withdrawal from your account	total amount in your account decreases
you're in a wheelchair or cannot reach ATM	use ATM machine lower to ground

Unit 1, Lesson 2 — Grades 5-6

Classroom Lesson - continued

Teacher: Today, we are going to reread parts of ***Money Sense for Kids*** and analyze implied cause and effect events. What does implied mean? Allow for response.
Guide students in understanding that implied means NOT stated in the text. Therefore, we might read the effect in the book, but the cause is implied.

DURING READING
Comprehensible Input: Literature
Teacher: Let's begin with a new T-chart. Direct students to draw out their chart on an unlined paper or construction paper. Direct students to turn to p. 65 in the text. *Look at the chart titled, Salaries Earned by Some Adults*. Reread the list of jobs grown-ups do and how much they are paid to do them.
Ask, "Why would the President of the U.S. be paid more than a school teacher? Turn to your partner and tell them." Allow for responses to be shared. Guide students to understand the job skills of the U.S. President are far greater than a school teacher.
Say, "A school teacher's salary is less than the U.S. President because they require different job skills. This is an implied cause and effect. We found out the answer by discussing what we know and what we learned from reading the text. Let's add this to our new chart."

cause	effect
U.S.President requires different job skills	U.S. President's salary is higher than other jobs

Teacher: Direct students to turn to p. 88. Reread paragraph beginning "Here's how it grows…"
After reading say, "In this paragraph the author stated compound interest is very low, but it's more than if your money stayed at home. What is the effect of keeping your money at home?" Guide students to understand that only in the bank will your savings earn interest.
Say, "If you keep your money at home, not in a bank- it will earn 0 interest. This is another cause and effect. Let's add it to the chart."

cause	effect
U.S.President requires different job skills	U.S. President's salary is higher than other jobs
Keep your money at home	0 interest is earned

Teacher: Direct students to turn to p. 90. Reread the top two bullets on this page.
After reading, ask, "Why do you need the account number to fill out a deposit or withdrawal form? Turn to your partner and share your thoughts." Allow partners to share with class.

MAS Space:
Today you expanded your background on cause and effect. Share your own cause and effect event.

Unit 1, Lesson 2 — Grades 5-6

Classroom Lesson - continued

Guide students in understanding that the account number allows the bank to identify your account. Each person has a different number. Your account number is unique or special, so it must be on the forms to show which account gets money. You wouldn't want your deposit to go into someone else's account. Let's add this cause and effect to the chart.

cause	effect
U.S.President requires different job skills	U.S. President's salary is higher than other jobs
Keep your money at home	0 interest is earned
Your account number is special	you must include your account number on forms

Teacher: Okay, let's do one more together. Turn to p. 93.
Reread the paragraph beginning "Some banks don't issue these to kids…" Why do we need to pick an easy PIN for our ATM card? Turn to your partner and share your thoughts.
Guide students to connecting that the PIN will have to be remembered and used often, so having it be an easy PIN, you will not worry about forgetting it.
Add it to the chart.

cause	effect
U.S.President requires different job skills	U.S. President's salary is higher than other jobs
Keep your money at home	0 interest is earned
Your account number is special	you must include your account number on forms
Your PIN must be remembered and it's used often	Choose an easy PIN code

AFTER READING
Practice and Application: Literature
Teacher: Today we discovered what some of the implied cause and effect events were in the book. What does implied mean? Allow for response.
Guide students in understanding that implied means NOT stated in the text. Therefore, we might read the effect in the book, but the cause is implied and we have to think through what the cause might be.

Teacher: Explain to students that they will select one of the cause and effect events and state it aloud to the group in a complete sentence.

The following are basic stems to guide the students toward creating a complete cause and effect statement. The stems contain signal words for cause and effect relationships.

- ___(cause)_____because _____(effect)_____.
- _____so, _____.
- _____then, _____.
- _____ if _____.
- _____when_____.

	Unit 1, Lesson 2 **Grades 5-6** **Classroom Lesson** - continued  **ELLs:** If your class has a range of English proficiency levels, display all of the sentences. Help beginning and intermediate ELLs use the beginning sentence stems, and help advanced ELLs and English-proficient students use the advanced sentence stems. **Transition to Math** Explain to students that the lesson today will talk about earning money at various rates *(hourly, weekly, monthly, etc.)* and unit prices of different items. Review vocabulary cards for rate and ratio. Make the collection of newspapers and magazines available to the whole class and ask students to find real world examples of rates. *(racing times, mpg, mph, feet per second, money, etc.) Monitor groups to ensure the class generates a variety of examples.* **Objectives** Read through the math and language objectives, making sure that students understand how they accomplished each.

Materials
- base-10 blocks
- thin-tip markers
- large construction paper (1 per student)
- **BLM** Tasty Tamales!

Math Vocabulary
fraction
ratio
decimal
percent
interest
rate
equivalent

Literature Vocabulary
deposit
withdrawal
budget
salaries
balance
account
savings
credit

ELPS (*English Language Proficiency Standard*) 2B, 2D, 3B, 3C, 3D, 3H

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.B.2., I.C.1., I.C.2
ELA II.A.2., II.A.6., II.B.1, II.A.2.
MATH I.B.1., I.C.1., II.A.1., II.B.1., V.B.1., V.B.2., VI.B.4., VIII.B.2

Unit 1, Lesson 2 — Grades 5-6

TV Lesson

Math Objectives:
- Add and subtract positive rational numbers fluently.
- Use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Building Background
During TV Lesson 1 students practiced different strategies for adding and subtracting money. Today they'll take a step forward and explore rates within financial situations and apply various multiplication strategies.

Comprehensible Input
BLM Tasty Tamales! is purposefully designed to walk students through the same multiplication situation using Concrete, Pictorial, and Abstract models/strategies to find a solution. Depending on the levels of your students, some may prefer one over the other. The concrete and pictorial models are used to build a solid foundation for fostering multiplicative thinking in students. They are not meant to be used as strategies for everyday math problems unless that child is still building his/her foundation. That does not mean those models are only appropriate for remedial students. ALL children need to learn new mathematical concepts through concrete models first, transfer to a pictorial representation, and then transition to an abstract algorithm. If a solid foundation is built first, then place value within traditional algorithms will be unveiled and understood. No longer will algorithms be a set of memorized steps.

Read the problem. Reread. Students Retell.

Solution Strategy #1
This concrete model will help students understand how place value works in a multiplication situation.

Have students make an area model frame on their construction paper as shown in the sidebar. It should look like the frame for a multiplication chart or a large division "house." Leave room across the top and left side to place base-10 blocks.

Area Model Frame

Figure 1

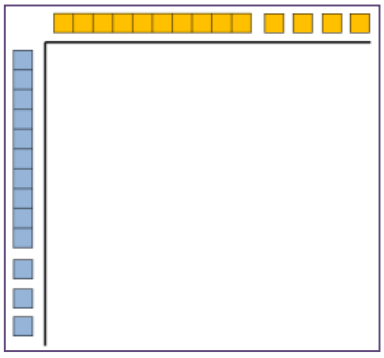
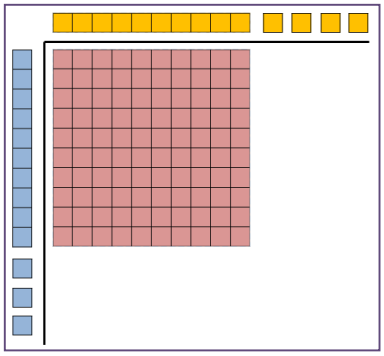


Figure 2



"What information do we need to solve this problem?" *(tamales cost $14 a dozen and she will make 13 in one week)*

"Is there an example of a rate in this problem?" *(yes, $14 per dozen)* "Is that just an ordinary old rate?" *(No, it is a unit rate because it's over 1 unit or per 1 unit.)*

"What operation do you think we need to perform to find the answer to this question?" *(multiplication)* "That's right. We need 13 groups of $14."

Students need to have their area model frame and a bank of base-10 blocks *(flats, longs, and units)*.

"How would I model $14 using the blocks?" *(1 long, 4 units)* Demonstrate for students how to place the long and units across the top of the frame. That's the first factor in this multiplication problem.

"How would I model 13 dozen using the blocks?" *(1 long, 3 units)* Demonstrate placing the long and units vertically down the left side of the frame. That's the other factor in this multiplication problem. Everyone's frame should look like Figure 1 in the sidebar.

"Let's start filling this multiplication chart in. BUT…we aren't going to crunch any numbers. I want us to match up side lengths of the blocks in our frame." We are not multiplying right now because students will get bogged down with the calculations, and frankly there's no reason to. Walk them through these next steps slowly until you can see they are catching on. Once the majority of the class understands how to match up side lengths move quickly.

Trace the length of the long across the top and then trace the long on the side while asking this question, "What blocks do we have in our banks that would match this length AND this length at the same time. Which block could I lay down right here that would match these two lengths?" *(The flat matches both lengths of the longs simultaneously.)*

Demonstrate how to place the flat inside the frame. Show in Figure 2.

Point to the first unit cube along the top and trace the length of the long on the left side while asking this question, "What blocks do we have that will match the short side of this unit cube AND the length of this long at the same time?" *(1 long)* Once this step is modeled most children figure out how to match sides. Move quickly from this point matching up the rest of the units along the top and on the left as shown in Figure 3.

Figure 3

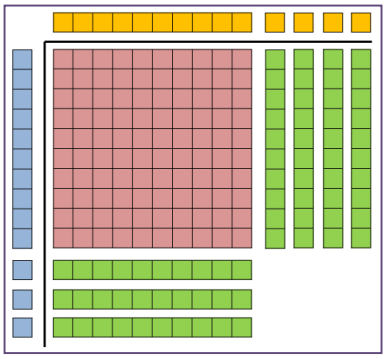


Figure 4

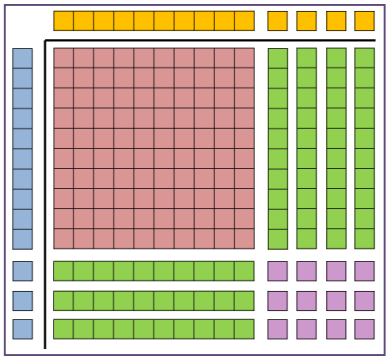


Figure 5

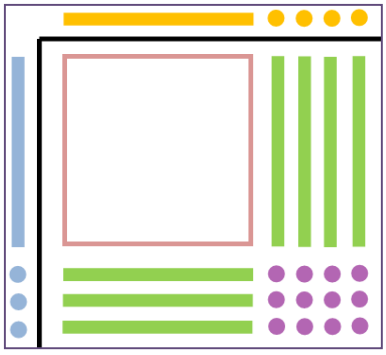
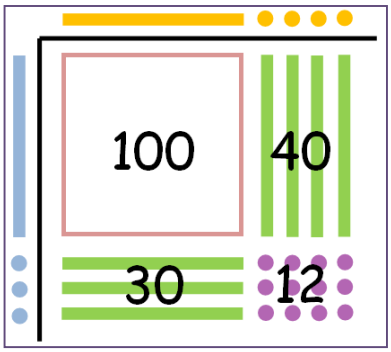


Figure 6



"Does it look like we matched up all of our side lengths? Does this frame look complete to you?" *(No, the bottom right is empty.)* Students will soon realize that when making our models they are always building with square tiles/blocks and will always result in a rectangular product. This is because it's a 2-dimensional measurement *(length x width)*. Hence, when calculating the area of figures the labels are read, "inches squared," "feet squared," "cm squared," and are written in^2, ft^2, and cm^2. "Inches squared" literally means the unit of measure is a square with side lengths of 1-inch.

Continue matching up *(short x short)* side lengths of the unit cubes until the frame is filled in as shown in Figure 4.

Now that students have completed the area model have them draw a pictorial model on their BLM. Use a light colored marker. *(Students will be writing values over the top of their drawing later.)* The tips are thick enough to draw a line to represent the longs, a dot to represent the units, and a square for the flat as shown in Figure 5. Do NOT let students draw exactly what the blocks look like. Drawing should be made with quick lines and dots.

Regarding the product built in the frame, ask students what the values are of each section. Point to the flat and say, "What is the value of this flat again?" *(100)* Label that on your drawing with a pencil or dark marker. Continue the same process with each section of blocks as shown in Figure 6.

Now have them find the sum of the partials. This should be mental math because partials are always friendly/compatible numbers. Hopefully students are able to figure 182 without calculating, but if they need to write it down let them.

"What does 182 represent?" *(It is how much money she will make from selling 13-dozen tamales.)*

Solution Strategy #2

The four square is the abstract version of the area model. It's set up the same way and solved the same way.

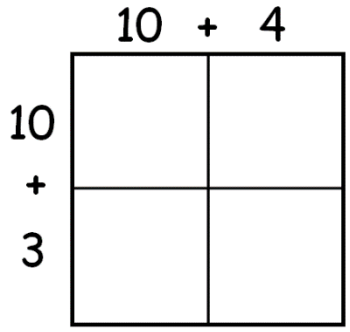
"Remember how we modeled $14 and 13 with base-10 blocks? *(yes, longs and units)* "The 4-square model does the same thing but with numbers. How is 14 written in expanded notation?" *(10 + 4)* "Isn't that oddly familiar……hmmm…. What about 13?" *(10 + 3)* "I think I've seen that somewhere before…." You are clueing them in that there are huge numerical relationships coming up.

"Label the 4-square model the same way we set up our area frame, but with numbers, not blocks. Make sure you write 14 and 13 in expanded notation *(with addition signs)*." Shown in Figure 7.

Start multiplying each quadrant. If students ask, it doesn't matter what order you multiply the quadrants. Let them choose the order.

Figure 8 shows a completed 4-square.

Figure 7

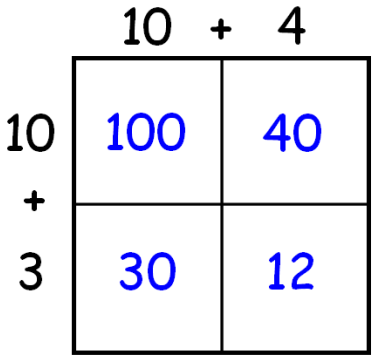


After students finish multiplying out their partial products, have them add up the partials like they did for the area model. The numbers should be very familiar. They should make numerical connections very quickly. Hold a quick class discussion about this discovery.

"How are these strategies alike? How are they different?"

Solution Strategy #3
Let students work with an elbow partner to solve \$14 x 13 with the standard/traditional algorithm shown in Figure 9.

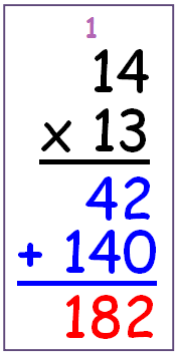
Figure 8



"How is the standard algorithm like the other two strategies? How is it different?" Students should realize that the 42 and the 140 in the algorithm are built from 30 + 12 and 100 + 40 in the other two models." The standard algorithm is a condensed version of the other strategies.

Solution Strategy #4
Solve during the Follow-up.

Figure 9



Pirate's Corner
Let Captain Portio and the TV teacher know which strategy you liked the best out of today's math lesson.

Objectives:
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 1 Lesson 2 – TV Lesson
One per student

Tasty Tamales!

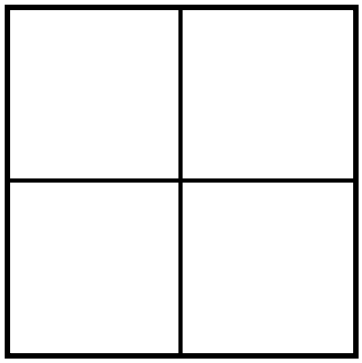
Work with your teacher and peers to complete this activity.

Delia realized she was getting a lot of requests for her cheese tamales. Making tamales is hard work and it takes a long time. She decided to increase the price of a dozen tamales to $14.00. The orders this week alone were already at 13 dozen. How much money will she make this week?

---

1. Build an area model with base-10 blocks to start solving this multiplication situation. Draw a picture of your model.

2. Solve the same problem using the 4-square model.



3. Solve the same problem using the standard multiplication algorithm.

4. Solve the same problem using a ratio table.

Price	$14					
dozens	1					

5. Explain how strategies 1, 2, and 3 are related numerically.

Unit 1 Lesson 2 – TV Lesson
One per student

¡Ricos tamales!

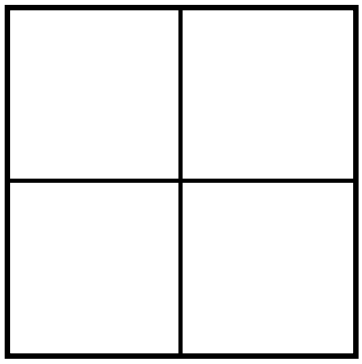
Colabora con tu maestro y tus compañeros para completar esta actividad.

Delia se dio cuenta de que le hacían muchos pedidos de sus tamales de queso. Hacer tamales es trabajo duro y requiere mucho tiempo. Ella decidió aumentar el precio de una docena de tamales a $14.00. Las órdenes de esta semana ya iban en 13 docenas. ¿Cuánto dinero ganará esta semana?

---

1. Construye un modelo de área con bloques base-10 para empezar a resolver esta situación de multiplicación. Haz un dibujo de tu modelo.

2. Resuelve el mismo problema usando el modelo de 4 cuadros.



3. Resuelve el mismo problema usando el algoritmo estándar de multiplicación.

4. Resuelve el mismo problema usando una tabla de relaciones.

Price	$14					
dozens	1					

5. Explica cómo se relacionan numéricamente las estrategias 1, 2 y 3.

Materials
- **BLM** Tasty Tamales!
- **BLM** Recursive Review Problems Lessons 1-3

Math Vocabulary
fraction
ratio
decimal
percent
interest
rate
equivalent

Literature Vocabulary
deposit
withdrawal
budget
salaries
balance
account
savings
credit

ELPS (*English Language Proficiency Standard*) 2B, 2D, 3B, 3C, 3D, 3H

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR II.B.1., II.B.2., II.E.2.
ELA I.A.1., I.A.3., II.A.2., II.A.6., II.B.1
MATH II.A.1., II.B.1., II.C.1., VIII.B.1.

Unit 1, Lesson 2 — Grades 5-6

Follow-up

Math Objectives:
- Generate equivalent ratios.
- Use ratios to make predictions in proportional situations.
- Use unit rates to solve problems with proportional relationships.
- Give examples of rates as the comparison by division of two quantities having different attributes, including rates as quotients

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Practice and Application
Continue with Solution Strategy #4 on **BLM** Tasty Tamales! from the math lesson.

Solution Strategy #4
This strategy is unlike the others because it utilizes the unit rate *($14:1 dozen)* to find the solution. Typically students do well when doubling and halving numbers. The ratio table is conducive to the child who may not be fluent in all of their multiplication facts. They can "clone" the unit rate by doubling over and over, and halving when needed. First, review the different ways to write a ratio *(word, fraction, colon)*.

Students will realize that ratios, because they are part-to-part relationships, can be added together part-for-part. This is a property of ratios that is NOT a property of fractions. Be explicit when telling them that adding fractions does NOT work the same way as ratios because they are part-to-whole relationships.

"What are we trying to find?" *(how much 13-dozen tamales costs)* Label that in the table as shown below.

Price	$14					?
dozens	1					13

Walk through the ratio table by doubling the unit rate.

"What is the unit rate in the problem?" *($14 per 1 dozen)*
"Do you know how much 2-dozen would cost?" *(double $14 = $28)*
Record the equivalent ratio in the table. Shown below.

Price	$14	$28				?
dozens	1	2				13

Follow-up - continued

"Right now we only know how much two-dozen costs. Do you think we could double that ratio?" Fill in chart as shown.

When doubling $28, help students use compatible numbers to do so. Do not let them write out an addition algorithm. $28 is very close to $25. Double $25 = $50. But we have three more for each of those 25's. So, double $3 = $6. Double $28 = $56. Fill in table as shown.

Price	$14	$28	$56			?
dozens	1	2	4			13

Double again. We're doubling because it is an easy strategy for students and because we're making up to 13-dozen step-by-step. Use compatible numbers again. Double $50 = $100. Double $6 = $12. Therefore, double $56 = $112. Fill in table as shown.

Price	$14	$28	$56	$112		?
dozens	1	2	4	8		13

"What do we know now?" *(that 8-dozen costs $112)*
"But we need 13-dozen… how many more dozens do we need to get to 13?" *(5)*

"Can any of the ratios we made in the table help us figure out how much 5-dozen will cost?" *(Yes, combine 1-dozen and 4-dozen.)*

"If 1 dozen costs $14 and 4-dozen costs $56, what will 5-dozen cost?" *($70)* Again, students should use compatible numbers to add. You are able to combine these ratios because it is another way to represent equal groups. Fill in chart as shown.

Price	$14	$28	$56	$112	$70	?
dozens	1	2	4	8	5	13

"How does that help me find the cost of 13-dozen?" *(combine dollar amounts for 8 and 5 dozen)* Fill in chart as shown.

Price	$14	$28	$56	$112	$70	$182
dozens	1	2	4	8	5	13

Recursive Review
Please use **BLM** *to answer the Recursive Review questions.*
Clarity timed herself running the 400 meter dash during track practice. Her times were 80.46 seconds, 78.3 seconds, 79.16

Follow-up – continued

seconds, and 81.05 seconds. She was keeping a log of her time spent running. What was her total running time for today's track practice?

Writing Topics

Independent Writing Topic

Students will have a daily writing activity which will incorporate the day's focus math vocabulary.

- **Explain why knowing how to calculate partial products mentally can help you in everyday life**.

Objectives

Review the math and language objectives to make sure that they were accomplished and that the students realize how they were accomplished.

Materials
- 1 large ice cream sandwich
- 2 paper dessert plates
- 2 paper towels
- 1 plastic knife
- 2 pieces wax paper
- 2 pair of scissors

All items listed above per partner pair
- **BLM** Ice Cream Sandwich-Snack Fractions
- **BLM** Ice Cream Sandwich-Snack Fractions Teacher Guide

Math Vocabulary
fraction
ratio
decimal
percent
interest
rate
equivalent

Literature Vocabulary
deposit
withdrawal
budget
salaries
balance
account
savings
credit

Unit 1, Lesson 2 — Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents.
- Convert between fractions, decimals, and percents.
- Estimate to find solutions to problems involving fractions, decimals, and percents.

Language Objectives
- Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.

Snack Fractions
Tell students they will use the same process today that they used in the Snack Fraction for Lesson 1. They will first work through the record sheet together, then share the actual snack.

Students should have the skills to answer these in small groups. Have the students work through the BLM before sharing the actual snack.

Circulate the room while students are working on the BLM, asking questions as needed to guide, redirect and extend:

QUESTIONS
- What does this fraction mean?
- How did you know where to cut?
- How did you change your decimal to a percent?

Finally, let them enjoy their ice cream sandwiches.

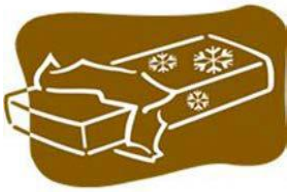
Snack Fraction Journal Writing: BLM Ice Cream Sandwich-Snack Fractions

Explain how $\frac{1}{2}$ of a $\frac{1}{2}$ is the same as $\frac{1}{4}$.

Objectives: Review the objectives with the class, making sure they understand how they achieved each.

Unit 1 Lesson 2 – Snack Fractions
One per student

Ice Cream Sandwich – Snack Fractions



Sharing Between Two People
The fractional representation for my portion of the snack is _____.

I can tell that ONE-HALF of a whole = ONE-HALF.

Here is the multiplication number sentence for that mathematical statement.
$\frac{1}{2}$ = _____ (decimal). My portion = _____ % of the ice cream sandwich.

Sharing Between Ten People
If there had been ten of us, my share would have been _____ . (word)

I can tell that ONE-TENTH of a whole = ONE-TENTH.

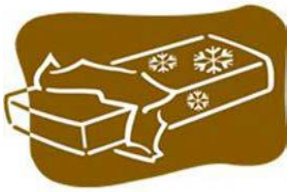
Here is the multiplication number sentence for that mathematical statement.
$\frac{1}{10}$ = _____ (decimal). My portion = _____ % of the ice cream sandwich.

Sharing Between Six People
Draw a picture and write a number sentence
that proves that half of one-sixth is one-twelfth.

Extra Practice
Generate two fraction addition sentences and one
fraction subtraction sentence using like-denominators
from this lesson such as halves, sixths, and tenths.

Unit 1 Lesson 2 – Snack Fractions
One per student

Sandwich de helado – Snack Fractions



Compartiendo entre 2 personas
La representación fraccional de mi porción es _____.

Sé que LA MITAD de la parte entera = UNA MITAD

Esta es la oración numérica de multiplicación para este hecho matemático.

$\frac{1}{2}$ = _____ (decimal). Mi porción = _____ % del sandwich de helado.

Compartiendo entre 10 personas
Si éramos diez, mi porción seria _____ . (palabra)

Sé que UN DÉCIMO de la parte entera = UN DÉCIMO

Esta es la oración numérica de multiplicación para este hecho matemático.

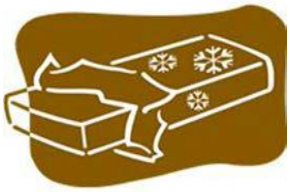
$\frac{1}{10}$ = _____ (decimal). Mi porción = _____ % del sandwich de helado.

Compartiendo entre 6 personas
Haz un dibujo y escribe la oración numérica que hace la prueba que la mitad de un sexto es un duodécimo.

Práctica adicional
Escribe dos oraciones con fracciones de suma y una de resta con algunos denominadores comunes de esta lección como mitades, sextos, y décimos.

Unit 1 Lesson 2 – Snack Fractions
Teacher copy

Ice Cream Sandwich – Snack Fractions TEACHER GUIDE



Sharing Between Two People

The fractional representation for my portion of the snack is half or $\frac{1}{2}$.

I can tell that ONE-HALF of a whole = ONE-HALF.

Here is the multiplication number sentence for that mathematical statement.
$\frac{1}{2}$ = 0.5 (decimal). My portion = 50 % of the ice cream sandwich.

Sharing Between Ten People

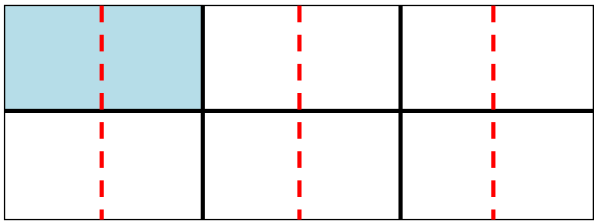
If there had been ten of us, my share would have been one-tenth. (word)

I can tell that ONE-TENTH of a whole = ONE-TENTH.

Here is the multiplication number sentence for that mathematical statement.
$\frac{1}{10}$ = 0.1 (decimal). My portion = 10 % of the ice cream sandwich.

Sharing Between Six People

Draw a picture and write a number sentence
that proves that half of one-sixth is one-twelfth.
This is one way to show the diagram. The shaded region shows one-sixth of the rectangle. Once each sixth is cut in half (vertical red lines), the pictures shows that two-twelfths are equal to one-sixth.

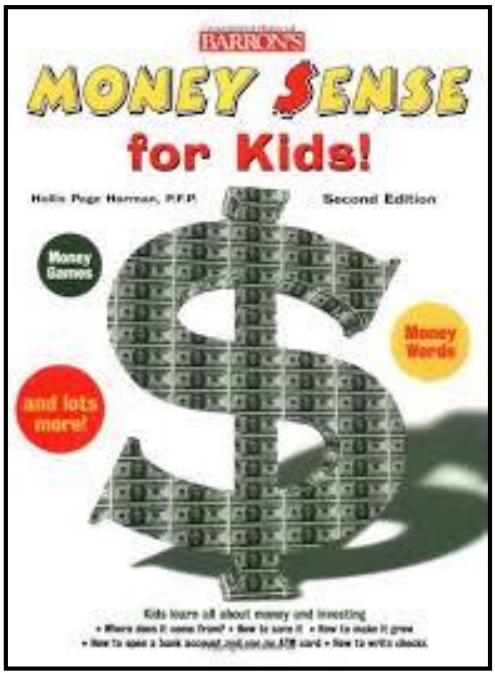


Extra Practice

Generate two fraction addition sentences and one
fraction subtraction sentence using like-denominators
from this lesson such as halves, sixths, and tenths. Answers will vary.
Examples: $\frac{2}{6} + \frac{3}{6} = \frac{5}{6}$; $\frac{8}{10} - \frac{3}{10} = \frac{5}{10}$ or $\frac{1}{2}$; etc… Any equation will do as long as the denominators are halves, sixths, or tenths and are alike within the equation.

Unit 1 Lesson 2 – Family Fun

Dear _____,



We continued learning about finances and banking from our story.

One new math concept I learned today was…

_____
_____
_____

I can use it in everyday life when…

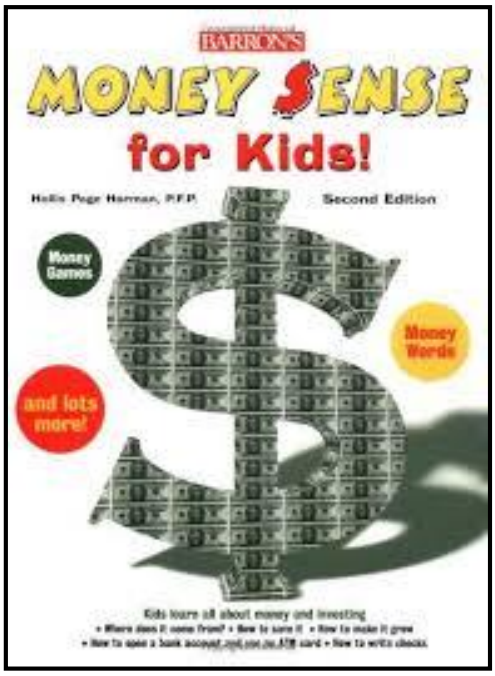
_____
_____
_____

Sincerely,

_____

Unit 1 Lesson 2 – Family Fun

Querido/a_____,



Seguimos aprendiendo sobre las finanzas y la banca del libro.

Un concepto de matemáticas que aprendimos hoy es…

_____
_____
_____

Lo puedo usar en mi vida diaria …

_____
_____
_____

Atentamente,

_____

Materials
- **BLM** Perimeter Pandemonium (2 of 2)-Measurement Lab Record Sheet
- **BLM** Solve It! Problem 3
- **BLM** Fraction Action and *X* Marks the Spot
- **BLM** Lessons 2-3 CGI ***Money Sense for Kids***

Math Objectives
- Solve problems using a measurement tool and calculating measurements.
- Model and solve multistep word problems.
- Solve problems involving fractions, ratios, and proportions.
- Solve for a variable.
- Compose and decompose numbers.

Language Objectives
- Speak to partners, teacher, and class using vocabulary.
- Discuss problem solving process and strategies. Explain how they decided to rename the target number.

Materials
fraction
ratio
decimal
percent
interest
rate
equivalent

Literature Vocabulary
deposit
withdrawal
budget
salaries
balance
account
savings
credit

Assessed TEKS for this Unit
5th – 5.3H, 5.3K
6th – 6.4C, 6.4E, 6.5B

Unit 1, Lesson 3 — Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post-assessment. They are not optional.

ESSENTIAL

Measurement Lab (5th assessment items 1,2,6)
- Lesson 1 – *omit*
- Lesson 2 – Perimeter Pandemonium (1 of 2)
- **Lesson 3 – Perimeter Pandemonium (2 of 2)**

Lesson 3 Materials
- tape measure or ruler (cm)
- Real World Folding Geometric Shapes or set of various real world objects with polygon faces (ex: cereal box, stop sign, tent, etc…)

Lesson 3 Student Groups
Even though the real world examples will most likely be three dimensional, students are still only finding the perimeter of 2-D polygons in this lesson. Be explicit that they are to measure the perimeter of ONE of the faces on the object. This will also help their understanding that 3-dimensional figures are composed of 2-dimensional polygons or shapes. Provide objects that represent many different types of polygons *(regular and irregular)*. A circle is NOT a polygon. Students may use decimals and fractions.
1) measure side lengths of each polygon face
2) record dimensions on BLM
3) calculate perimeter of each polygon

Solve It! Multi-step problem solving (5th assessment items 4,5)
- Lesson 1 – *omit*
- Lesson 2 – pairs, 2-step
- **Lesson 3 – independent, 2-step**

Fraction Action
- Lesson 1 – *omit*
- Lesson 2 – (5th assessment item 6)
- **Lesson 3 – (5th assessment 1,2,3,4,5,6)**

***X* Marks the Spot**
- Lesson 1 – *omit*
- Lesson 2 – (5th assessment items 4,5)
- **Lesson 3 – (5th assessment items 1,2,3)**

ELPS (*English Language Proficiency Standard*) 2A, 2B, 2C, 4C, 4J,5D **CCRS** *(College and Career Readiness Standards)* CROSS-CURRICULAR I.A.1., I.C.2., I.C.3., II.D.1 ELA III.A.1., III.B.2., IV.A.3 MATH II.A.1., II.A.2., II.D.1., VI.C.2., IX.A.1., IX.A.3	**Unit 1, Lesson 3** **Grades 5-6** **Daily Routine** - continued **----------** **CGI** • Lesson 1 – *omit* • Lesson 2 – Compare Referent Unknown (5th assessment item 5) • **Lesson 3 – Price Partitive Division (6th assessment item 6)** **----------** **The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.** **----------** **OPTIONAL** **Target Number** • Lesson 1 – *omit* • Lesson 2 – Target Number 12 • **Lesson 3 – Target Number 24** **Money Matters** (*If you have a full program and wish to use this optional activity, you will find BLMs and Explanations on MAS Space*.)

Unit 1 Lesson 3 – Daily Routines – Measurement Lab
One per student

Perimeter– Measurement Lab Record Sheet

Students should work in small groups.

Materials:

- tape measure or ruler (cm)
- Real World Folding Geometric Shapes or set of various real world objects with polygon faces (ex: cereal box, stop sign, tent, etc…)

Task:

- Write the mathematical name of the polygon faces you will measure in the left column of the chart below. (Example: scalene triangle, irregular octagon, regular hexagon, etc.)
- Sketch a picture of the polygon you are measuring.
- Record the number of sides.
- Measure side lengths of each polygon to nearest $\frac{1}{4}$ of an inch.
- Label corresponding sides on sketch in chart.
- Calculate the perimeter of each polygon. You may use decimals and/or fractions.

	draw shape	**# of sides**	**calculate perimeter**	**perimeter**
Shape 1:				
Shape 2:				
Shape 3:				
Shape 4:				

Unit 1 Lesson 3 – Daily Routines – Measurement Lab
One per student

Los estudiantes deben trabajar en grupos pequeños.

Materiales:

- cinta de medir o regla (cm)
- conjunto de varios objetos del mundo real con caras poligonales (por ejemplo, cajas de cereal, señal de alto, tienda, etc).

Tarea:

- Escribe el nombre matemático de las caras poligonales que medirás en la columna izquierda de la tabla siguiente. (por ejemplo: triángulo escaleno, octágono irregular, hexágono regular, etc.)
- Haz un boceto del polígono que vas a medir.
- Registra el número de lados.
- Mide las longitudes de los lados de cada polígono hasta el $\frac{1}{4}$ de pulgada más cercano.
- Etiqueta los lados correspondientes en el boceto de la tabla.
- Calcula el perímetro de cada polígono. Puedes usar decimales y/o fracciones.

	Dibuja la forma	**# de lados**	**Calcular el perímetro**	**perímetro**
Forma 1:				
Forma 2:				
Forma 3:				
Forma 4:				

Unit 1 Lesson 3 – Daily Routines - Solve It! Problems (individual)
One per student

Problem 4:
Fred charged $8.25 per adult and $4.50 per child to visit the petting zoo. How much would it cost for a mom, dad, and one child to visit Fred's petting zoo?

Problem Solution Name:	**Solution Verification** Name:

Unit 1 Lesson 3 – Daily Routines - Solve It! Problems (individual)
One per student

Problema 4:
Fred cobraba $8.25 por adulto y $4.50 por niño para visitar el zoológico interactivo. ¿Cuánto costaría la entrada al zoológico interactivo de Fred para una familia con papá, mamá y un niño?

Solución del problema Nombre:	**Verificación de la solución** Nombre:

Unit 1 Lesson 3 – Daily Routines - Solve It! Problems (individual) **5-6**
1 per student

Partner 2 - Problem 5:
Fred charged $8.25 per adult and $4.50 per child to visit the petting zoo. How much would it cost for a grandmother, a grandfather, and one grandchild to visit Fred's petting zoo?

Problem Solution Name:	**Solution Verification** Name:

Unit 1 Lesson 3 – Daily Routines - Solve It! Problems (individual)
One per student

Problema 4:
Fred cobraba $8.25 por adulto y $4.50 por niño para visitar el zoológico interactivo. ¿Cuánto costaría la entrada al zoológico interactivo de Fred para una familia con abuelo, abuela y un nieto?

Solución del problema Nombre:	**Verificación de la solución** Nombre:

Unit 1 Lesson 3 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

Janeye used glittery tulle to make a tutu. It was so popular with her friends they requested some for their little girls. If Janeye plans to make 3 tutus for her friends, how much tulle does she need to buy if tutu #1 needs 5.5 yards, tutu #2 needs $6\frac{1}{4}$ yards, and tutu #3 needs 8.25 yards of tulle? Solve using all decimals, then again using all fractions.

X Marks the Spot

Solve for *x*. **Hint – subtract small fractional "chunks" piece by piece until you arrive at $3\frac{1}{2}$.*

$$4\frac{1}{4} - 3\frac{1}{2} = x$$

Unit 1 Lesson 3 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

Materiales:
Ninguno para esta actividad

Tarea:
Janeye usó tul brillante para hacer un tutú. Le gustó tanto a sus amigas que le pidieron algunos para sus hijitas. Si Janeye planea hacer 3 tutús para sus amigas, ¿cuánto tul necesita comprar si el tutú # 1 requiere 5.5 yardas, el tutú #2 requiere $6\frac{1}{4}$ yardas, y el tutú #3 requiere 8.25 yardas de tul? Resuelve usando sólo decimales, y luego otra vez usando sólo fracciones.

X Marca el sitio

Resuelve para *x*. **Pista– resta pequeños "pedazos" fraccionales pieza por pieza hasta que llegues a* $3\frac{1}{2}$.

$$\mathbf{4\frac{1}{4} - 3\frac{1}{2} = x}$$

Materials
- 5 unlined sheets of paper
- pencil
- colors/markers

Literature Selection
Money Sense for Kids
by Hollis Page Harman, PFP
(Earn It p.61 and Grow It p. 85)

Math Vocabulary
fraction
ratio
decimal
percent
interest
rate
equivalent

Literature Vocabulary
deposit
withdrawal
budget
salaries
balance
account
savings
credit

ELPS (*English Language Proficiency Standard*) 2C, 2F, 3C, 4E, 4F, 4J, 4K

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR II.A.4., II.A.5., II.A.6
ELA II.A.2., II.A.3., II.A.4., III.B.2

Technology Option
If a classroom dictionary is unavailable, then utilize
www.wordsmyth.net

Four Corners Vocabulary

illustration 1	sentence 3
definition 2	

Unit 1, Lesson 3 — Grades 5-6

Classroom Lesson

Every day teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

Math Objectives:
- Add and subtract positive rational numbers fluently.
- Use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates.
- Represent ratios and percents with concrete model, fractions, and decimals.

Language Objectives:
- Read a contextualized sentence that includes a vocabulary word.
- Read the definition for a vocabulary word.
- Identify words related to vocabulary words.
- Analyze the meaning of common idioms.

BEFORE READING
Building Background - Vocabulary
Tell students that today we will continue creating a 4-corners vocabulary chart for the remaining four words on the list. Together you will complete the chart for the word *budget*. Then, with your partner you will complete the remaining three words.
- *budget*
- *account*
- *savings*
- *credit*

Comprehensible Input - Vocabulary
Direct the students in folding an unlined sheet of paper into fourths as the model to the left demonstrates. Once the paper is folded, have the students keep the paper folded *(model with your own sheet)* so that only the first block is viewable. We will begin with the top left corner *(corner 1)*, then move down to corner 2, and so forth. Direct students to write the number 1 in the upper left corner of the box.

Teacher: We will complete this 4-corners chart together using the vocabulary word *budget.*

Unit 1, Lesson 3 — Grades 5-6

Classroom Lesson - continued

Model and practice utilizing the text and other resources to support the information in the corners. You will guide the students through the same process as lesson 2, with the exception of allowing more student suggestions for filling in the corners. Think aloud through your processing as you complete the chart with the students' responses.

Illustration Option:

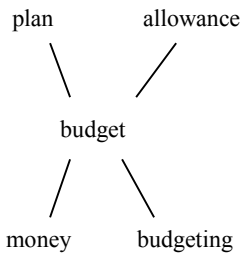
Definition Option:
www.wordsmyth.net

A plan for how a person or a group will receive and spend money during a certain period.

Origin of budget:
From *bougette*, an early French word for a small bag or wallet.

Sentence Option:
My pet food budget is usually higher in the winter months.

Vocabulary Word Option:



Corner 1
Teacher: What information do we place in the first box? Yes, a picture. What would be a good picture to represent budget? Guide students in their thinking with your personal experience in budgeting money. Let's draw a quick picture to represent budget.

Corner 2
Teacher: What information do we place in the second box? Correct- this is where we write the definition. Guide the students in defining *budget* utilizing at least two resources. *Budget* was not in the two chapters we read together, and if students have read other chapters during independent reading time, they might have sticky noted the word. Possible resources are dictionary, the book, Internet.

Corner 3
Teacher: Time for my personal favorite box! What do we write in this box? Yes, this is the corner we write our own sentence using the word budget. Think of a sentence using *budget*. Allow students think time. Share your sentence with your neighbor. Afterward, share your own sentence with the students. If you choose to share the sentence option to the left- ask, "Why would my pet food budget be higher in the winter months?" Point out to students that this is a cause and effect situation. Students fill in the box with their sentence of choice.

Corner 4
Teacher: We've come to the fourth box! What information do we include in this corner? We write any words that are related to the vocabulary word. We can write synonyms or words that mean the same and we can write word families.

Practice and Application – Vocabulary
Teacher: Now it's your turn to create four corners charts with the remaining three words.

- *account*
- *savings*
- *credit*

While students work with a partner on this activity, you can meet with a small group of beginning ELLs to create the Four Corners chart collaboratively. For the sentence corner, model how to use the word in a sentence, and write the sentence down so they can see it. Have your ELLs create a similar sentence based on your model.

Gallery Walk
When students have finished, have them post their two sheets on the wall. Students take a gallery walk to read other students' 4 Corners Vocabulary Charts and thinking about which sentences are their favorites. Regroup the class and have students bring their sheets. Ask them to share which classmates had some of their favorite sentences.

BEFORE READING
Building Background - Literature
Teacher: Tell a brief story to the students about your child or niece or nephew coming to ask for ten dollars to go to the movies. You said to them, "Ten dollars! Money doesn't grow on trees." Why did I say, money doesn't grow on trees? Yes, my child *(niece/nephew)* asked for money, but why didn't I just say no? What would it be like if money did grow on trees? There would be a lot of it and it would be easy to find. It would be easier to just say 'no' you cannot have ten dollars because I do not have that much extra money. Saying, "Money doesn't grow on trees" is an example of an idiom. People use idioms to make language more exciting and entertaining.

Explain that idioms can be found in literature, in television shows, in movies, and people use idioms in conversation with one another. Idioms are another way to think about cause and effect.

Teacher: We're going to look into several idioms related to money and discover the cause for them.
Write these five idioms where the students can see.

- *Pay an arm and a leg for something*
- *Have a nest egg*
- *Tighten your belt*
- *In the red*
- *Have a cash cow*

DURING READING
Comprehensible Input - Literature
Teacher: Idioms are sayings that mean something other than the obvious or literal meaning of the words used. Let's discuss an idiom that some of you might be more familiar with.

Unit 1, Lesson 3 — Grades 5-6
Classroom Lesson - continued

Write the idiom *pay an arm and a leg* on the board. Then say, "I put fuel in my truck and I paid an arm and a leg for it! What do you know about trucks?" Guide students to understanding that trucks are usually big *(as yours is)* and take a large amount of fuel. The fuel costs a lot of money. The figurative meaning is if you gave an arm and a leg, you could still get by - however that is a high price to pay.

Continue discussing and using a model sentence for the remaining four idioms and discuss their meaning. The model sentence should be a subject the students can relate to and assist in the cause for the idiom.

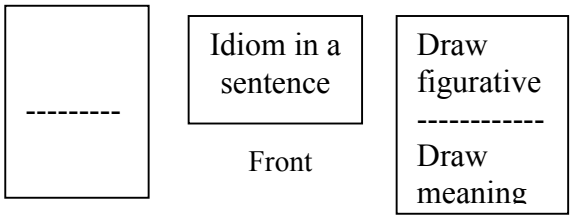
- *Have a nest egg* = savings set aside for future use
- *Tighten your belt* = avoid the waste of money, spend sparingly
- *In the red* = losing money, spending more than you make
- *Have a cash cow*= a business or a part of business that always makes a lot of money

Teacher: Our book contains some other words and phrases that refer to money. Turn in your book to p. 158.

Read through the list and discuss the use or examples of each of the words as it relates to money. ***Note:*** Not all of these words or phrases are categorized as idioms. Most all are slang or a type of figurative language that are beneficial to ELLs vocabulary/language comprehension.

AFTER READING
Practice and Application - Literature
Have the students select their favorite idiom from the list of five above. Tell them not to share their choice with anyone. Distribute an 8 ½ x 11 sheet of paper to each student.

Students will fold the paper in half as modeled here.



MAS Space:
Share your favorite idiom you wrote today. Why is this a favorite?

On the outside, students will write a sentence containing the idiom. Inside top half will have the figurative drawing of the idiom *(cash cow = cow made of money perhaps)*, then on the bottom half draw the meaning of the idiom.

Journal Response:
What is your plan for saving or earning money? Encourage students to utilize as many vocabulary words in their writing. What do you plan to do with your savings?

ELPS (*English Language Proficiency Standard*) 2D, 2H, 2I, 3D

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR III.A.2., III.B.2., IV.B.1
MATH V.B.1., V.B.2., VIII.B.2

Unit 1, Lesson 3 — Grades 5-6

Classroom Lesson - continued

Students may work in partners or you can bring a small group of the beginning ELL students to a table to work with individually.

ELLs: Beginning and early intermediate ELLs can write the sentence in their native language if necessary, or very closely model their sentence on the teacher's example. You can also briefly meet with individual ELLs or a small group to help them write a sentence while the rest of the class writes their own.

Students may also read aloud their sentences to the class, and explain what made them think of that sentence.

Transition to Math

Write several computation problems on the board for students to practice addition and subtraction of decimals and ratio tables based on rates of any kind *(not just money related)*. You may wish to use examples based on the real world rates and ratios found in Lesson 2 Transition to Math newspaper activity. Examples could be:

a) 4289.032 + 2444.09 = _____
b) 98442.102 – 352.5 = _____
c) 15 books: 8 months, how many months for 45 books?
d) 26 stickers: 1 page, how many stickers on 4.5 pages?
e) 100 feathers: 4 fans, how many feathers for 1 fan?
f) 39 tomatoes: 13 plants, how many tomatoes on 1 plant?

…so on…. Allow students to make up some of the ratios as well.

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Materials
- **BLM** Danny's Income

Math Vocabulary
fraction
ratio
decimal
percent
interest
rate
equivalent

Literature Vocabulary
deposit
withdrawal
budget
salaries
balance
account
savings
credit

ELPS (*English Language Proficiency Standard*) 2B, 2D, 3B, 3C, 3D, 3H

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.B.2., I.C.1., I.C.2
ELA II.A.2., II.A.6., II.B.1, II.A.2.
MATH I.B.1., I.C.1., II.A.1., II.B.1., V.B.1., V.B.2., VI.B.4., VIII.B.2

Unit 1, Lesson 3 — Grades 5-6

TV Lesson

Math Objectives:
- Add and subtract positive rational numbers fluently.
- Use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates.
- Represent ratios and percents with concrete model, fractions, and decimals.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Building Background
During TV Lesson 2 students learned several strategies for solving multiplication problems in money situations. This lesson will focus on percentages, rates, and interest. Unlike Lesson 2, students will learn three strategies through three different problem situations.

Comprehensible Input
Problem #1
This problem was designed to put mathematical constraints on students in order to nudge them toward a specific strategy. Partials will be used with ratios to solve this problem when it would typically be answered with the standard algorithm. The constraint is the size of the numbers in the problem. 5^{th} – 6^{th} graders won't know how to divide a large 3-digit dividend by a 4-digit divisor. This is a great example of relating division to multiplication. The ratio table allows children to multiply instead of divide. Practice the ratio table strategy again for this problem.

"How should we solve this problem?" *(divide $650 by $16.50)*
"How many of you LOVE to divide? How many of you really want to tackle that kind of division right now? Looks pretty scary." *(not many)*
"If you don't want to divide, you don't have to." Have students set up a horizontal ratio table with the understanding they don't know exactly how many columns they'll need yet. The table is a work in progress.

"What should my labels be for the ratio table?" *(This relationship can be inverse as well, pick whichever ratio the kids choose. This lesson will use a unit rate.)* "And what information is given and can be placed inside the table right now?" *(picture of labeled table shown)*

Income	$16.25			$650.
hour	1			???

Students have freedom in the ratio table to generate equivalent ratios by any multiplier they want. Doubling is used most often because it requires very little calculation. In other words, it's usually a mental math strategy. Doubling will be used in this lesson example.

"We know he makes $16.25 an hour. So, we need to figure out how many groups *(hours)* of $16.25 it will take to build up the total of $650."

"Would it be fairly easy to double Danny's income?" *(yes)* "What is Danny's income for two hours?" *($32.50, fill in chart as shown below)*

Income	$16.25	$32.50		$650.
hour	1	2		???

"Not quite there yet, but I'd like to double one more time…I have a hunch that the next answer will help us out tremendously." *(double again, fill in chart as shown)* Hold a quick conversation with the class regarding your "hunch," how it will be helpful to building up to $650, and how you were able to look ahead without actually doing the math. It is important that students realize their number sense and relationships can be used as part of the problem solving process, not just in the act of solving the problem.

Income	$16.25	$32.50	$65.00	$650.
hour	1	2	4	???

Teacher Note
Always use mental math strategies (such as partials) to find doubled values. We are building number sense, mental math, and place value understanding. We do not want students calculating these figures on scratch paper. If doubling $16 is too difficult because of the regrouping, just double $10, double $6, and double $0.25. Then quickly combine those values.

Now is the time to highlight that the ratio table isn't just used for doubling. Students should know that $65.00 is very compatible with $650 because of the relationship of 10. They can arrive at the total dollar amount by multiplying by 10 as shown below. Again, this is mental math.

Income	$16.25	$32.50	$65.00	$650.00
hour	1	2	4	40
		x2	x2	x10

For students who need the multiplicative relationship noted, please do so in any way you see appropriate. One way is shown above. You may also note any additive relationships used in the ratio table *(not used in this example)* much like the ratio table problem from Lesson 2.

"What did we just figure out? What does this mean?" *(It will take Danny 40 hours to make $650.)*

Problem #2

The ratio table strategy was used in Problem #1 because the multiplicative skills necessary to use it are needed to execute the strategy of setting up equivalent rations in an equation format. Students may use the same exact number sense skills and relationships to solve this condensed version.

"What information do we know based on Problems 1-2?" *(It takes 40 hours to make $650, 40 hours is considered one full week of work, and a month is four weeks long.)*

"What are we looking for?" *(How much Danny will make in one month.)* There is a simple conversion between units of measure that can either be performed first, or after the problem is solved. This lesson will demonstrate the simple conversion first.

"What's the first ratio we should write?" ($\frac{\$650}{40\ hrs}$) "But doesn't the question want us to answer in weeks? How do we handle that?" *(40 hrs = 1 week as said in Problem #2.)* "Wouldn't it be helpful with our units and with our calculations if we go ahead and convert 40 hrs to 1 week?"

New ratio: $\frac{\$650}{1\ \text{week}}$

"What do we want to know again? How should we set that equal to the given information?" *(How much he will earn in four weeks. Make sure the ratio labels are consistent.)*

Equivalent ratios: $\frac{\$650}{1\ \text{week}} = \frac{\$\,x}{4\ \text{weeks}}$

Teacher Note
Emphasize the importance of consistent labels. A ratio table is great for keeping labels straight, but that is a common mistake in this strategy.

There are several ways to solve for *x*, but we will use the Constant of Proportionality *(aka Scale factor)*. This is the left to right multiplicative relationship that was used in the ration table strategy.

$$\frac{\$650}{1\ \text{week}} = \frac{\$\,x}{4\ \text{weeks}}$$

x4

Of course, the same rule holds true for fractions as with ratios, that in order to keep them equivalent the relationship must be applied to the numerator and denominator. Students may not be able to multiply $650 by 4 in one step. Let them double, then double to arrive at the answer. Double $650 = $1300, double $1300 = $2600.

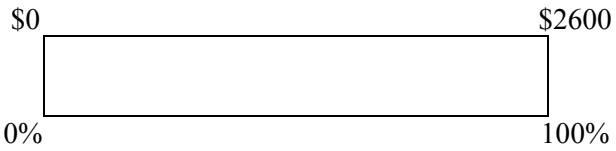
"What did we just find?" *(That x equals $2600. That means Danny will make $2600 in four weeks.)*

Problem #3

A strip diagram is used to represent a whole and parts within the whole. If this is their first experience with a strip diagram, walk slowly through the labeling process.

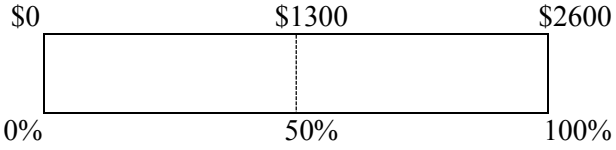
"What values do we need for this problem?" *($2600, 25%...)*

Set up the strip diagram *(bar model)* as shown below. $2600 represents 100% of his earnings. This figure is not given in the problem, it should be understood.

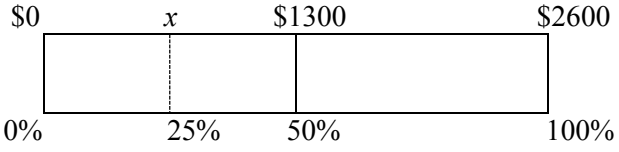


Always set up benchmark values such as the halfway point, quarter values, or even thirds if it's related to the numbers in the problem. Here we will use half and quarters.

"We know we need to find 25% of his earnings, but I think marking values for the benchmark 50% will help us find our answer." Do so as shown below. Students should know half of $2600 quickly.



"How would we find 25% of his earning?" *(25% is half of 50%, so half of $1300 should be our answer.)* Shown below. Half of $1300 should be easy if students refer back to their work from Problem #2.



x equals $650. Hold a quick discussion about why these problems came full circle. "How did 25% of his income equal what he makes in one week?" *(25% represents $\frac{1}{4}$ of his income. 1 out of 4 weeks is also $\frac{1}{4}$ and worth $650.)*

	Unit 1, Lesson 3 **Grades 5-6** **TV Lesson** - continued **----------** **Captain's Corner** Tell Captain Portio and the TV teacher which strategy you liked the best out of the three you learned in the math lesson today and why it's your favorite! **Objectives:** Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 1 Lesson 3 – TV Lesson
One per student

Danny's Income

Work with your teacher and peers to complete these questions.

1. Danny is a machinist and builds helicopter parts for most of his work projects. He makes $16.25 an hour for his specialized skills. How many hours will he have to work to at least pay for his $650.00 rent? Use a ratio table as a strategy to solve this problem.

2. He is happy that it only takes him one week (5 days) to earn enough money to cover rent. Using the information from problem #1, use equivalent ratios (not in a table format) to find out how much money Danny will make altogether in one month if he works 4 full weeks.

3. Since he's an independent contractor, he holds 25% of his earnings back to pay taxes. Use a strip diagram (bar model) to calculate how much he will hold for taxes AND how much money he will keep as income.

Unidad 1 Lección 3 – Lección TV
Una por estudiante

Los ingresos de Danny

Colabora con tu maestro y tus compañeros para responder estas preguntas.

1. Danny es un mecánico y hace piezas de helicóptero para la mayoría de sus proyectos de trabajo. Él gana $16.25 por hora por sus habilidades especializadas. ¿Cuántas horas tendrá que trabajar para pagar por lo menos su alquiler de $650.00? Usa una tabla de relaciones como estrategia para resolver este problema.

2. Él está feliz de que sólo le toma una semana (5 días) para ganar suficiente dinero para pagar su alquiler. Usando la información del problema #1, usa relaciones equivalentes (no en un formato de tabla) para averiguar cuánto dinero ganará Danny en un mes si trabaja 4 semanas completas.

3. Dado que es un contratista independiente, él separa 25% de sus ganancias para pagar impuestos. Usa un diagrama de tiras (modelo de barra) para calcular cuánto separará para impuestos Y cuánto dinero le queda de ingreso.

Materials
- Family Fun Generic Game Board
- Family Fun Movement Cards
- Unit 1 Family Fun Problem Cards for grades 5-6 (yellow)
- Family Fun Answer Key for Unit 1 (all grade bands)
- Unit 1 Family Fun Special 5th – 6th Game Instructions
- game markers
- **BLM** Recursive Review Problems Lessons 1-3

Math Vocabulary
fraction
ratio
decimal
percent
interest
rate
equivalent

Literature Vocabulary
deposit
withdrawal
budget
salaries
balance
account
savings
credit

ELPS (*English Language Proficiency Standard*) 2B, 2D, 3B, 3C, 3D, 3H

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR II.B.1., II.B.2., II.E.2.
ELA I.A.1., I.A.3., II.A.2., II.A.6., II.B.1
MATH II.A.1., II.B.1., II.C.1., IV.B.1.,VII.A.1., VIII.B.1.

Unit 1, Lesson 3 — Grades 5-6
Follow-up

Math Objectives:
- Add and subtract positive rational numbers fluently.
- Use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates.
- Represent ratios and percents with concrete model, fractions, and decimals.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Practice and Application
Students will learn how to play the Family Fun Game during the Follow-up in Lesson 3 of each unit. If time from the Follow-up is needed to complete work from the TV Lesson, please do so. However, it is important that each child learn the Family Fun Game during today's Follow-up.

Pass out materials for each student and read game directions. Pair them up and allow them to play the game. Each player uses a game marker to place in the start position *(each corner)*. Player One picks a Problem Card, solves problem, other players verify answer. Correct – Player chooses a Movement Card and follows directions. Incorrect – Player does not move. Repeat steps for each player. First one back to their start position is the winner.

Recursive Review
- If Jenny can fit 13 cupcakes into one box, how many boxes will she need to pack 91 cupcakes? Use a ratio table to solve this problem.

Writing Topics
Independent Writing Topic
Students will have a daily writing activity which will incorporate the day's focus math vocabulary.

- **Explain how rates and ratios are related?**

Objectives
Review the math and language objectives to make sure that they were accomplished and that the students realize how they were accomplished.

Materials
- 5 large string cheese
- 4 paper dessert plates
- 4 paper towels
- 4 plastic knives
- 4 pieces wax paper
- 4 pairs of scissors

All items listed above per partner pair
- **BLM** Sting Cheese-Snack Fractions
- **BLM** Sting Cheese-Snack Fractions Teacher Guide

Math Vocabulary
fraction
ratio
decimal
percent
interest
rate
equivalent

Literature Vocabulary
deposit
withdrawal
budget
salaries
balance
account
savings
credit

Unit 1, Lesson 3 — Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents.
- Convert between fractions, decimals, and percents.
- Estimate to find solutions to problems involving fractions, decimals, and percents.

Language Objectives
Discuss how fractions, decimals, ratios, and percents can be used

Snack Fractions
Students should have the skills to answer these in small groups. Have the students work through the BLM before sharing the actual snack.

Tell students that today you will share among four students. Distribute the five pieces of string cheese and other supplies to the groups of four and let them decide how to share the string cheese and how much of the set each person received.

When everyone is finished, distribute the **BLM** String Cheese Fractions. Students work in their groups of four to solve the problem. Use class time to discuss the strategies and solutions once all have finished.

Snack Fraction Journal Writing: BLM String Cheese Fractions
During the Snack Fractions activities for this unit you or your classmates may have noticed a relationship between the number of people the snack is being shared with and how many times the snack is "cut" or divided. Example: Three donuts are shared between four people.

Explain the relationship between the number of people eating the snack and how many times the snack was divided.

Objectives: Review the objectives with the class, making sure they understand how they achieved each.

Unit 1 Lesson 3 – Snack Fractions
One per student

String Cheese – Snack Fractions

Problem:
Enrique had five pieces of string cheese to share among himself and three of his brothers.

Questions:
1. What fractional portion of the snack did each person receive?

2. How do you write one portion as a decimal? Percent?

3. What if one person wasn't hungry for the string cheese. What fractional portion of the snack would each person receive then? Draw a picture.

4. How do you write that as a decimal? Percent?

Unidad 1 Lección 3 – Fracciones de refrigerios

Una por estudiante

Queso en tiras - Fracciones de refrigerios

Problema:
Enrique tenía 5 piezas de queso en tiras para compartir entre sí mismo y tres de sus hermanos.

Preguntas:

5. ¿Qué parte fraccional del refrigerio recibió cada persona?

6. ¿Cómo escribes una porción en forma decimal? ¿En porcentaje?

7. ¿Qué tal si una persona no quería queso en tiras? ¿Qué parte fraccional del refrigerio recibiría cada persona entonces? Dibuja una imagen.

Unit 1 Lesson 3 – Snack Fractions
Teacher copy

String Cheese – Snack Fractions TEACHER GUIDE

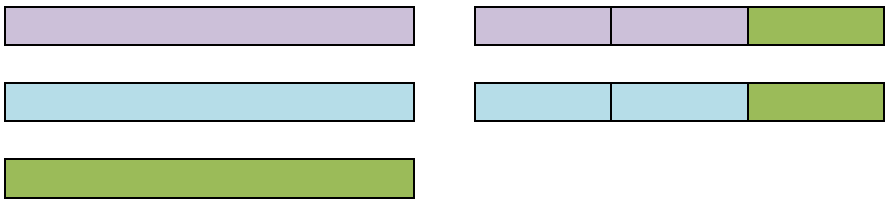
Problem:
Enrique had five pieces of string cheese to share among himself and three of his brothers.

Questions:

1. What fractional portion of the snack did each person receive? $1\frac{1}{4}$

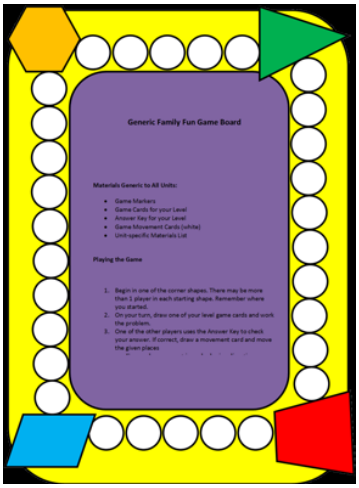
2. How do you write one portion as a decimal? Percent? 1.25 and 125%

3. What if one person wasn't hungry for the string cheese. What fractional portion of the snack would each person receive then? Draw a picture. 1 and $\frac{2}{3}$ The fraction is **NOT** 1 and $\frac{2}{6}$.
   The whole is divided into three pieces, therefore those pieces are thirds. Six-thirds are shown in the picture. Six-thirds is equivalent to two wholes (two cheese sticks).



4. How do you write that as a decimal? Percent? 1.66 or 1.67 and 166% or 167%. Although one-third is a repeating decimal, it is a benchmark that all students should become familiar with.

Unit 1 Lesson 3 – Family Fun



Dear _____,

We learned a few more skills today using ratios and proportions!

Here are some strategies I'll need to solve the problems in this unit's game today…

_____

_____

_____

_____

Sincerely,

_____

Unidad 1, Lección 3 – Diversión familiar 

Querido _____,

¡Hoy aprendimos algunas habilidades más usando relaciones y proporciones!

Estas son algunas estrategias que necesitaré para resolver hoy los problemas de esta unidad en el juego...

_____
_____
_____
_____

Atentamente,

_____

This portion of the curriculum is NOT required, but should be used to supplement and enrich the Unit's activities.	**Enrichment Suggestions** Unit 1 ***Money Sense for Kids*** **Math Walk** Take a walk around the school, then go back and measure the distance you walked. How much would that walk be worth if you were paid a penny a yard? Quarter a yard? Half dollar a yard? Dollar a yard? Five dollars a yard? **Technology Connection** • http://senseanddollars.thinkport.org/ Cool site for kids to learn about gross and net income and simulate a month's earnings and bill paying. • **iPad App – Count Money** Four levels of difficulty; choice of 10, 25 or 50 problems. **More Curriculum Connection Ideas off the Web** • **Social Studies:** http://www.clevelandfed.org/Learning_Center/Online_Activities/explore_money/index.cfm?DCS.nav=Local Explore Money From Around the World http://www.newmoney.gov/newmoney/dyob/index.html Interactive designing your own bill www.bis.gov/cpi Click on Inflation Calculator to see how much prices from years ago would cost now. • **Science:** http://www.ehow.com/info_10065600_sixthgrade-science-projects-pennies.html Several science activities involving pennies. • **Art:** Create a Coin Rubbing collage.

Generic Family Fun Game Board

Materials Generic to All Units:

- Game Markers
- Game Cards for your Level
- Answer Key for your Level
- Game Movement Cards (white)
- Unit-specific Materials List

Playing the Game

1. Begin in one of the corner shapes. There may be more than one player in each starting shape. Remember where you started.
2. On your turn, draw one of your level game cards and work the problem.
3. One of the other players uses the Answer Key to check your answer. If correct, draw a movement card and move the given places
   - Forward movement in a clockwise direction.
   - Backward movement in a counter clockwise direction.

   If incorrect, do not move.
4. Game is over when the first person runs the entire track, ending back on the starting shape.

Tablero de juego

Materiales genéricos para todas las unidades:

- Fichas para jugar
- Tarjetas del juego para su nivel
- Clave de respuestas para su nivel
- Tarjetas de movimiento del juego (blancas)
- Lista de materiales específicos de la unidad

Cómo se juega

1. Empiece en una de las esquinas. Puede haber más de
1 jugador en cada figura de inicio.
2. Cuando sea su turno, saque una de las tarjetas de
juego de su nivel y resuelva el problema.
3. Uno de los otros jugadores usa la clave de respuestas
para ver si su respuesta es correcta. Si es correcta, saque una tarjeta de movimiento y mueva su ficha como lo indica la tarjeta.
   - Movimiento hacia adelante en el sentido de las manecillas del reloj.
   - Movimiento hacia atrás en el sentido contrario a las manecillas del reloj.

   Si es incorrecta, no se mueve.
4. El juego se acaba cuando la primera persona recorre
toda la pista y termina en la figura de inicio.

BLM All-School Unit 1, Lesson 3 **Family Fun Game Answer Key**

Problem Letter	Kinder	1-2	3-4	5-6	7-8
A	This coin is a quarter.	(listen to the skip counting)	x x x x x x x x x x x x	633.29 miles	$\frac{22 \text{ boys}}{30 \text{ girls}}$
B	This coin is a dime.	(listen to the skip counting)	x x x x x x	$3237.88	$\frac{15 \text{ girls}}{26 \text{ total}}$
C	This coin is a penny.	(listen to the skip counting)	x x x x x x x x x x	perimeter = 99.5 meters	$\frac{14 \text{ boys}}{33 \text{ total}}$
D	This coin is a quarter.	5 cents	3 x 5 = 15	width = 10.75 meters	$\frac{21 \text{ red}}{33 \text{ total}}$
E	This coin is a dime.	10 cents	2 x 5 = 10	334.325 yards	6 cups of flour
F	This coin is a penny.	1 cent	2 x 3 = 6	$451.09	$\frac{1}{4}$ cup of onions
G	This coin is a nickel.	25 cents	There were 4 nickels in each bank.	$35 for each yard	12 cups of flour
H	This coin is a nickel.	14 nickels	There were 2 stacks of 5 nickels.	$2800	$12\frac{1}{2}$ cups sugar
I	This coin is a dime.	11 quarters	any model equivalent to 1/2	$744	11.5 oz of chocolate
J	Benny had 4 pennies.	19 pennies	4.05	$205	16 baskets
K	Benny had 2 pennies.	11 pennies	27.12	$675	20 baskets
L	Benny had 4 pennies.	4 pennies	3 5/10 or 3 1/2	$11.75 per hr	Same. Ratios are equivalent at 2:3
M	Benny had 5 pennies.	3 pennies	Four and twenty-three hundredths	$660 (double $330)	12 blue
N	Benny had 5 pennies.	7 pennies	2 tenths	$165 (half of $330)	18 red
O	Benny had 0 or no pennies.	14 pennies	4 tenths	$x = \$100$ (double 25, double 50)	16 yellow
P	(counts out 15 pennies)	Make a group of 5 and a group of 6	1.5 < 1.75 Less than	$x = 56$ (half of 112)	$72.00
Q	(counts out 12 pennies)	Make a group of 8 and a group of 8	1.51 > 1.49 Greater than	$412.50 (half of $825)	50 minutes
R	(counts out 20 pennies)	Show 12 pennies and remove 6.	1.2 > 1.02 Greater than	$150 (50% = $100, 25% = $50, combine)	Alicia – She runs $1\frac{2}{3}$ blocks per min.

One per student for home
One per partner pair in class

*Print on **white** paper.*

Family Fun – Movement Cards

Move forward 1 space	**Move forward 1 space**	**Move forward 1 space**
Move forward 1 space	**Move forward 1 space**	**Move forward 1 space**
Move forward 2 spaces	**Move forward 2 spaces**	**Move forward 2 spaces**
Move back 1 space	**Move back 1 space**	**Move back 1 space**
Move forward 3 spaces	**Move forward 2 spaces**	**Move forward 3 spaces**

Units 1 – 2 – 3 -- FAMILY FUN

One per student for home
One per partner pair in class

*Print on **white** paper.*

Family Fun – Movement Cards

Avanza un espacio	**Avanza un espacio**	**Avanza un espacio**
Avanza un espacio	**Avanza un espacio**	**Avanza un espacio**
Avanza 2 espacios	**Avanza 2 espacios**	**Avanza 2 espacios**
Retrocede 1 espacio	**Retrocede 1 espacio**	**Retrocede 1 espacio**
Avanza 3 espacios	**Avanza 3 espacios**	**Avanza 3 espacios**

Units 1 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

*Print on **yellow** paper.*

Family Fun – Problem Cards (1 of 2)

A. If Franklin drove 256.89 miles on Monday and 376.4 miles on Tuesday, how many miles did he drive on both days together?	**B**. Cayla deposited her paycheck into her bank account. The new balance was $5679.18. If her check was $2441.30, how much was already in her account?	**C**. A rectangular garden has dimensions of 31.25 meters by 18.5 meters. What is the perimeter of the garden?
D. The pool has a perimeter of 52.5 meters. If the length of the pool is 15.5 meters, what is the width?	**E**. Trudy had 120.2 yards of fabric left on the bolt. The new shipment came in with the same print at 214.125 yards. How many yards of that print did she have altogether?	**F**. James paid his cell phone bill for $126.89. His bank showed a previous balance of $577.98. How much does he have in the bank after the bill?
G. Percy earned $700 this summer mowing yards. If he mowed 20 yards, how much did he charge for each lawn if they were all the same price?	**H**. **$35 x 80 hrs = _____**	**I**. **$18.60 x 40 hrs = _____**

Units 1 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

*Print on **yellow** paper.*

A. Si Franklin condujo 256.89 millas el lunes y 376.4 millas el martes, ¿cuántas millas condujo en total en ambos días?	**B**. Cayla depositó su cheque de nómina en su cuenta bancaria. Su nuevo saldo fue de $5679.18. Si su cheque era por $2441.30, ¿cuánto tenía ya en su cuenta?	**C**. Un jardín rectangular tiene dimensiones de 31.25 metros por 18.5 metros. ¿Cuál es el perímetro del jardín?
D. La piscina tiene un perímetro de 52.5 metros. Si la longitud de la piscina es de 15.5 metros, ¿cuál es su ancho?	**E**. A Trudy le quedaban 120.2 yardas de tela en el rollo. Llegó un nuevo embarque con 214.125 yardas del mismo estampado. ¿Cuántas yardas de ese estampado tenía en total?	**F**. James pagó su cuenta de teléfono celular por $126.89. Su cuenta bancaria tenía un saldo previo de $577.98. ¿Cuánto tiene en el banco después de pagar la cuenta?
G. Percy ganó $700 este verano podando jardines. Si podó 20 jardines, ¿cuánto cobró por cada jardín si cobró el mismo precio por todos?	**H**. **$35 x 80 hrs = _____**	**I**. **$18.60 x 40 hrs = _____**

Units 1 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

*Print on **yellow** paper.*

Family Fun – Problem Cards (2 of 2)

J.
John earns $10.25 an hour. If he worked 20 hours this week, how much will his check be before taxes?

K.
Layla sold custom necklaces for $45 online. Her order this month was 15 necklaces. How much money will she earn if she completes all 15?

L.
Benjamin's check was $188. If he worked 16 hours, how much did he get paid an hour before taxes?

M. Solve for x.

$$\frac{\$330}{2 \text{ paintings}} = \frac{\$\ x}{4 \text{ paintings}}$$

N. Solve for x.

$$\frac{\$330}{2 \text{ paintings}} = \frac{\$\ x}{1 \text{ painting}}$$

O. Use the ratio table to solve for x.

price	$25		$ x
box	3		12

P. Use the ratio table to solve for x.

points	x	112	224
game	1	2	4

Q.
What is 50% of $825.00?

R.
What is 75% of $200.00?

Units 1 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

*Print on **yellow** paper.*

J.
John gana $10.25 por hora. Si trabajó 20 horas esta semana, ¿por cuánto será su cheque antes de impuestos?

K.
Layla vendió collares a la medida en línea por $45. Las órdenes de este mes fueron por 15 collares. ¿Cuánto dinero ganará si hace los 15?

L.
El cheque de Benjamin fue por $188. Si trabajó 16 horas esta semana, ¿cuánto le pagaron por hora antes de impuestos?

M. Resuelve para *x*.

$$\frac{\$330}{2 \text{ paintings}} = \frac{\$\ x}{4 \text{ paintings}}$$

N. Resuelve para *x*.

$$\frac{\$330}{2 \text{ paintings}} = \frac{\$\ x}{1 \text{ painting}}$$

O. Usa la tabla de relaciones para resolver para *x*.

precio	$25		$ *x*
caja	3		12

P. Usa la tabla de relaciones para resolver para *x*.

puntos	*x*	112	224
juego	1	2	4

Q.
¿Cuánto es el 50% de $825.00?

R.
¿Cuánto es el 75% de $200.00?

Units 1 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

Special 5th – 6th Game Instructions

Materials:

- Family Fun Generic Game Board
- Family Fun Movement Cards
- Unit 1 Family Fun Problem Cards for grades 5-6 (yellow)
- Family Fun Answer Key for Unit 1 (all grade bands)
- Unit 1 Family Fun Special 5th – 6th Game Instructions

Solution Expectations

Problems A – F

This problem set covers the addition and subtraction of decimals. Students shouldn't have a tough time solving these. The main concern is to make sure place value spots are lined up correctly. Some students line up the decimals, which lines up place value.

Problems G – L

This problem set covers multiplication and division in money situations. Students may use any strategy they choose to solve the problems. This may include standard algorithms, ratio tables, partials, area models, etc. For example:

Card L: Students did not use the division algorithm in the lesson. Instead they learned the ratio table for this type of problem. This card stretches their knowledge of the ratio table as it is worked backwards (halving) from the examples done in class (doubling). Ratio table shown below:

income	$188	$94	$47	$23.50	$11.75
hours	16	8	4	2	1

÷2 ÷2 ÷2 ÷2

Problems J – R

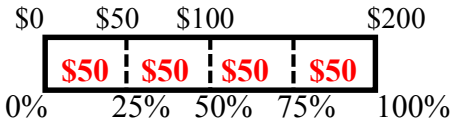
This problem set deals with equivalent ratios and percents. Students are asked to use multiplicative relationships to solve M and N, ratio table for cards O and P, and cards Q and R could be solved using a bar model. However, students may use any strategy to solve the percent problems. For example,

Card M: $\frac{\$330}{2 \text{ paintings}} = \frac{\$\,x}{4 \text{ paintings}}$

x2

Therefore, double $330 to get $660.

Card R:



50% = $100. That means every 25% = $50. Therefore, 75% = $150.

Unidad 1, Lección 3 – DIVERSIÓN FAMILIAR

Una por estudiante por hogar
Uno por pareja de compañeros en el salón

Instrucciones especiales de juego para 5º – 6º

Materiales:

- Tablero de juego genérico de Diversión Familiar
- Cartas de movimiento de Diversión Familiar
- Cartas de problemas de Diversión Familiar de la Unidad 1 para grados 5-6 (amarillo)
- Guía de respuestas de Diversión Familiar para la Unidad 1 (todos los grados)
- Instrucciones especiales de juego de la Unidad 1 de Diversión Familiar para 5º – 6º

Expectativas de solución

Problemas A – F

Este conjunto de problemas cubre la suma y resta de decimales. Los estudiantes no deben tener problemas para resolverlos. La principal preocupación es asegurarse de que los espacios de magnitudes estén alineados correctamente. Algunos estudiantes alinean los puntos decimales, con lo que alinean los espacios de magnitud.

Problemas G – L

Este conjunto de problemas cubre la multiplicación y división en situaciones con dinero. Los estudiantes pueden cualquier estrategia que deseen para resolver los problemas. Estas pueden incluir algoritmos estándar, tablas de relaciones, parciales, modelos de área, etc. Por ejemplo,

Carta L: Los estudiantes no usaron el algoritmo de división en la lección. En cambio, aprendieron la tabla de relaciones para este tipo de problema. Esta carta lleva al límite su conocimiento de las tablas de relaciones, ya que se utiliza al revés (dividiendo a la mitad) de los ejemplos hechos en clase (duplicando). La tabla de relaciones se muestra a continuación:

ingresos	$188	$94	$47	$23.50	$11.75
horas	16	8	4	2	1

÷2 ÷2 ÷2 ÷2

Problemas J – R

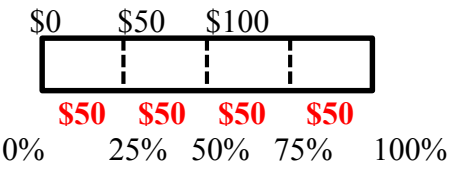
Este conjunto de problemas utiliza relaciones equivalentes y porcentajes. Se pide a los estudiantes que usen relaciones multiplicativas para resolver M y N, tablas de relaciones para las cartas O y P, y las cartas Q y R podrían resolverse usando un modelo de barra. Sin embargo, los estudiantes pueden cualquier estrategia para resolver los problemas de porcentajes. Por ejemplo,

Carta M: $\frac{\$330}{2 \text{ paintings}} = \frac{\$ \text{ x}}{4 \text{ paintings}}$

$200

x2

Carta R:



Unidad 1, Lección 3 – DIVERSIÓN FAMILIAR
Una por estudiante por hogar
Uno por pareja de compañeros en el salón

Por lo tanto, se duplican los $330 para obtener $660.

50% = $100. Eso significa que cada 25% = $50. Por lo tanto, 75% = $150.

Unit 1 – *Money Sense for Kids*

Math Matters 2014 – In-Home Instruction

Math Objectives

TV Lesson 1

- Use addition and subtraction to solve problems involving whole numbers and decimals.

TV Lesson 3

- Use addition and subtraction to solve problems involving whole numbers and decimals.
- Use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates.
- Represent ratios and percents with concrete model, fractions, and decimals.

Differentiate

TV Lesson 1 – students practice addition and subtraction of decimals.

TV Lesson 3 – students practice using the ratio table, bar model, and equivalent ratios to find missing values and percents.

Snack Fraction Notice

All snack fractions are common throughout the grade bands. All grade bands have daily snack fraction activities provided. All snack fractions for a unit in a specific grade band will practice the same set of skills. Therefore, you may choose from any of the 3 activities. Lesson 2, Crackers and Nutella is the simplest snack to transport.

Materials

TV Lesson 1

- **BLM** Piggy Bank Story Problems
- scratch paper

TV Lesson 3

- **BLM** Danny's Income

Family Fun

- Family Fun Generic Game Board
- Family Fun Movement cards
- Unit 1 Family Fun-Problem Cards
- Family Fun Answer Key from Unit 1 (all grade bands)
- Unit 1 Family Fun Special 5^{th} – 6^{th} Game Instructions
- game markers

Snack Fractions (TV Lesson 3**)**

- 5 large string cheese
- 4 paper dessert plates
- 4 paper towels
- 4 plastic knives
- 4 pieces wax paper
- 4 pairs of scissors

All items listed above per partner pair

- **BLM** Sting Cheese-Snack Fractions

Unit 1 – *Money Sense for Kids*

Math Matters 2014 – In-Home Instruction

QUESTIONING
As a result of this lesson, your students should be able to respond to the following:

- What does it mean to find the "percent" something?
- How are the area model, 4-square, and standard algorithm related numerically?
- What data are you trying to find?
- Explain your strategy to me.
- How can a bar model help you find percents?

Math Vocabulary
fraction, ratio, decimal, percent, interest, rate, equivalent

CGI Problem

- Lesson 1 – Part-Part-Whole (5^{th} asmnt item 4)
- Lesson 2 – Compare Referent Unknown (5^{th} asmnt item 5)
- Lesson 3 – Price Partitive Division (6^{th} asmnt item 6)

Journal Writing
Explain how rates and ratios are related.

Family Fun
A generic game board is being used in all grade levels, differentiated by game cards specific to the grade level.

Snack Fractions
Students divide their snack into thirds and fourths and calculate fractions and equivalent decimals.

Assessment
As a result of experiencing the activities in this unit, students will be introduced to and practice skills for items:
5^{th} – 1, 2, 3, 4, 5, 6
6^{th} – 1, 2, 3, 4, 5, 6, 7, 8

Grades 5-6 Overview

Unit 2, Lesson 1 Biography and Artwork of M.C. Escher

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine ***Unit 2 Lesson 1*** 30 – 45 minutes	Solve problems using a measurement tool and calculating measurements. Model and solve multistep word problems. Solve problems involving fractions, ratios, and proportions. Solve for a variable. Compose and decompose numbers.	Speak to partners, teacher, and class using vocabulary. Discuss problem solving process and strategies.	**Essential:** • Measurement Lab • Solve It! Problems • Fraction Action • *X* Marks the Spot • CGI **Optional:** • Target Number 48 • Money Matters	• pattern blocks (at least 1 hexagon, 2 trapezoids, 3 rhombi, 6 triangles) • balance • black, red, blue, and green markers	• **BLM** Pattern Block Pizazz (1 of 3) Measurement Lab Record Sheet • **BLM** Solve It! Problems 1-2 • **BLM** Fraction Action and *X* Marks the Spot • **BLM** Lessons 1-3 CGI Biography and Artwork of M.C. Escher http://www.mcescher.com/
Classroom ***Lesson 1*** 1 hour – 1.5 hours	Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models. Represent ratios and percents with concrete models, fractions, and decimals.	**Language Objectives:** Read and discuss with group members a piece of nonfiction text. Read a biography and identify information based on key words in questions: Who, what, when, where, why. Listen to questions, generate answers in writing, and orally report the answers to class members.	**Transition to Math** Review percent concepts using a bar model.	• Biography and Artwork of M.C. Escher http://www.mcescher.com/ • 8 ½ x 11 blank page for each student • Small sticky notes (optional) • pencil	• **BLM** Bar Model-Percents • **BLM** M.C. Escher Biography (option)

TV ***Lesson 1*** 30 minutes	Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Students learn how to create like denominators by using pattern blocks to make equivalencies between fractions with unlike denominators.	• pattern blocks (hexagons, trapezoids, rhombi, triangles) • black, red, blue, and green markers	• **BLM TV Lesson *Verbum*** • **BLM** Pattern Block Pizazz (1 of 3) Measurement Lab Record Sheet • **BLM** Fraction Frenzy
Follow-up ***Lesson 1*** 30 minutes – 1 hour *(including Snack Fractions)*	Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Practice and Application** Students learn how to use the multiplication chart to find a common multiple between unlike denominators.	• set of dominoes • 1 coin • scratch paper • 12x12 multiplication chart *All items listed above per partner pair.*	• **BLM** Fractional Fortitude Game Directions • **BLM** Fractional Fortitude Record Sheet
Snack Fractions ***Lesson 1***	Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents. Convert between fractions, decimals, and percents. Estimate to find solutions to problems involving fractions, decimals, and percents.	Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.	Students will work in pairs and explore fraction and decimal concepts through fair-sharing carrots and guacamole (or other dip).	• 1 cup guacamole or other dip • 6 carrots (small) • 2 half-cup measuring cups • 2 plastic spoons • 2 paper dessert plates • 2 paper towels *All items listed above per partner pair*	• **BLM** Dip 'n Veggies-Snack Fractions • **BLM** Dip 'n Veggies-Snack Fractions Teacher Guide

Grades 5-6 Overview

Unit 2, Lesson 2 Biography and Artwork of M.C. Escher

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine ***Unit 2 Lesson 2*** 30 – 45 minutes	Solve problems using a measurement tool and calculating measurements. Model and solve multistep word problems. Solve problems involving fractions, ratios, and proportions. Solve for a variable. Compose and decompose numbers.	Speak to partners, teacher, and class using vocabulary. Discuss problem solving process and strategies.	**Essential:** • Measurement Lab • Solve It! Problems • Fraction Action • *X* Marks the Spot • CGI **Optional:** • Target Number 20 • Money Matters	• black, blue, and green markers	• **BLM** Pattern Block Pizazz (2 of 3) Measurement Lab Record Sheet • **BLM** Pattern Block Pizazz (2 of 3) Teach Guide • **BLM** Hexagonal Tessellations #1 • **BLM** Solve It! Problem 3 • **BLM** Fraction Action and *X* Marks the Spot • **BLM** Lessons 1-3 CGI Biography and Artwork of M.C. Escher http://www.mcescher.com/
Classroom ***Lesson 2*** 1 hour – 1.5 hours	Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models. Represent ratios and percents with concrete models, fractions, and decimals.	**Reading Objectives:** Use resources such as internet, dictionary, thesaurus, and peers to determine or clarify the meaning of unfamiliar words. Complete semantic mapping for unfamiliar words to broaden comprehension of word meaning, origins, and part of speech. Comprehend new vocabulary and use it when reading and writing. **Language Objectives:** Listen to questions, generate answers in writing, and orally respond to class members.	**Transition to Math** Students review percent concepts using mental math strategies and bar models.		• **BLM** Word Cards Lesson 1 • **BLM Semantic Map** • **BLM** Percent of Interest and Tips

TV ***Lesson 2*** 30 minutes	Use ratios to describe proportional situations. Represent ratios and percents with concrete models, fractions, and decimals. Use ratios to make predictions in proportional situations.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Students use scale factor and constant of proportionality to solve for unknowns in equivalent ratio situations.		• picture of *Metamorphosis I* by M.C. Escher • **BLM** Pattern Block Pizazz (2 of 3) Measurement Lab Record Sheet • **BLM** Hexagonal Tessellations #1 • **BLM** Equivalent Ratios
Follow-up ***Lesson 2*** 30 minutes – 1 hour *(including Snack Fractions)*	Use ratios to describe proportional situations. Represent ratios and percents with concrete models, fractions, and decimals. Use ratios to make predictions in proportional situations.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Practice and Application** Students continue practice with equivalent ratios and then build their tessellations.	• scissors • clear tape • glue stick • copy paper *1 per student*	• **BLM** Hexagonal Tessellations #1 • **BLM** Tessellation Creation! • **BLM** Example Tessellation Picture
Snack Fractions ***Lesson 2***	Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents. Convert between fractions, decimals, and percents. Estimate to find solutions to problems involving fractions, decimals, and percents.	Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.	Students will work in pairs and explore fraction and decimal concepts through fair-sharing of trail mix.	• 2 paper dessert plates • 2 paper towels • 1 plastic knife • 2 pieces wax paper • 2 pair of scissors • 2 cups trail mix (pre-packaged or home-made) ***Allergy Warning – please substitute a nut-free mix for the entire class if nut allergies are present.*** *All items listed above per partner pair*	• **BLM** Trail Mix-Snack Fractions • **BLM** Trail Mix-Snack Fractions Teacher Guide

Grades 5-6 Overview

Unit 2, Lesson 3 Biography and Artwork of M.C. Escher

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine ***Unit 2 Lesson 3*** 30 – 45 minutes	Solve problems using a measurement tool and calculating measurements. Model and solve multistep word problems. Solve problems involving fractions, ratios, and proportions. Solve for a variable. Compose and decompose numbers.	Speak to partners, teacher, and class using vocabulary. Discuss problem solving process and strategies.	**Essential:** • Measurement Lab • Solve It! Problems • Fraction Action • *X* Marks the Spot • CGI **Optional:** • Target Number 100 • Money Matters	• black, red, blue, and green markers	• **BLM** Pattern Block Pizazz (3 of 3) Measurement Lab Record Sheet • **BLM** Pattern Block Pizazz (3 of 3) Teach Guide • **BLM** Hexagonal Tessellations #2 • **BLM** Solve It! Problem 4 • **BLM** Fraction Action and *X* Marks the Spot • **BLM** Lessons 1-3 CGI Biography and Artwork of M.C. Escher http://www.mcescher.com/
Classroom ***Lesson 3*** 1 hour – 1.5 hours	Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models. Represent ratios and percents with concrete models, fractions, and decimals.	**Reading Objectives:** Analyze, make inferences and draw conclusions about expository text and provide evidence from text to support comprehension. Summarize the main idea and supporting details in text, demonstrate an understanding that a summary does not include opinions. Synthesize information from text and note taking to create summary of reading. **Language Objectives:** Listen and respond to questions orally.	**Transition to Math** Students continue practicing mental math strategies in percent situations.	• 7 4x6 (preferably) lined any color index cards per student	• **BLM** Word Cards Lesson 1 • Students' completed note taking paper from lesson 1 • **BLM** Day and Night • **BLM** M.C. Escher Biography (option) lesson 1 • **BLM** Percent of Tax and Interest

		Orally retell the summary of an expository text. Write a 75-90 word précis for an expository text.			
TV ***Lesson 3*** 30 minutes	Use ratios to describe proportional situations. Represent ratios and percents with concrete models, fractions, and decimals. Use ratios to make predictions in proportional situations.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Students explore more difficult equivalent ratio concepts using tessellation pieces. They are encouraged to use mental math strategies.		• picture of *Metamorphosis II* by M.C. Escher (must obtain online – picture is too large to display on a BLM) http://www.mcescher.com/gallery/most-popular/metamorphosis-ii/ • **BLM** Pattern Block Pizazz (3 of 3) Measurement Lab Record Sheet • **BLM** Hexagonal Tessellations #2 • **BLM** Ratio Predictions
Follow-up ***Lesson 3*** 30 minutes – 1 hour *(including Snack Fractions)*	Use ratios to describe proportional situations. Represent ratios and percents with concrete models, fractions, and decimals. Use ratios to make predictions in proportional situations.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Practice and Application** Students assemble tessellations and then play the Family Fun Game.	• scissors • glue stick • copy paper • Family Fun Generic Game Board • Family Fun Movement Cards • Unit 2 Family Fun Problem Cards for grades 5-6 (yellow) • Family Fun Answer Key for Unit 2 (all grade bands) • Unit 2 Family Fun Special 5^{th} – 6^{th} Game Instructions • game markers	• **BLM** Hexagonal Tessellations #2 • **BLM** Recursive Review Problems Lessons 1-3

Snack Fractions ***Lesson 3***	Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents. Convert between fractions, decimals, and percents. Estimate to find solutions to problems involving fractions, decimals, and percents.	Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.	Students will work in pairs and explore fraction and decimal concepts through fair-sharing tomatoes and cheese cubes.	• 1 cup cherry tomatoes • 1 cup cheese cubes • 2 half-cup measuring cups • 2 paper dessert plates • 2 paper towels *All items listed above per partner pair*	• **BLM** Tomatoes and Cheese-Snack Fractions • **BLM** Tomatoes and Cheese-Snack Fractions Teacher Guide

Project SMART/Math MATTERS 2014

Grade Level: 5-6	Unit 2 / Lessons 1 – 2 – 3

Daily Routine Math Objectives:
Solve problems using a measurement tool and calculating measurements.
Model and solve multistep word problems.
Solve problems involving fractions, ratios, and proportions.
Solve for a variable.
Compose and decompose numbers.

Daily Routine Language Objectives:
Speak to partners, teacher, and class using vocabulary.
Discuss problem solving process and strategies.

Unit Math Objectives:
Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.
Use ratios to describe proportional situations.
Use ratios to make predictions in proportional situations.
Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models.
Add and subtract positive rational numbers fluently.

Language Objectives:
Read and discuss with group members a piece of nonfiction text.
Read a biography and identify information based on key words in questions: Who, what, when, where, why.
Listen to questions, generate answers in writing, and orally report the answers to class members.

Technology Objectives:
Use research skills and electronic communication, with appropriate supervision, to create new knowledge.

Vocabulary
Math: fraction, ratio, percent, tessellation, scale factor, constant of proportionality
Literature Vocabulary: lithograph, predecessors, tapestries, mural, architecture, linoleum, perspective

Resources/Literacy Links
Utilize the M.C. Escher biography on the website for initial reading. The **BLM M.C. Escher Biography** enables the students to view closer if computers are not available and in the event the Internet is not in service.
https://www.mcescher.com
https://www.wordsmyth.net

Lesson Sequence

- Daily Routine: 30 – 45 minutes
- Classroom Lesson: 1 hour – 1.5 hours
- Math Lesson: 30 minutes
- Follow-up including Snack Fractions: 30 minutes - 1 hour

Unit 2 OPTIONAL All-School Project

Because all grade bands will be reading, learning and researching within the same unit theme, we are offering OPTIONAL projects in which all ages can participate.

Unit Theme: Artist Biographies

Unit 1: Art Museum Exhibits

Defined:

Students work as grade bands to create samples of their artist's medium.

Kinder – music, particularly mambo rhythms (Tito Puente)

1-2 – pottery (David

3-4 – murals (Diego Rivera)

5-6 – tessellations (MC Escher)

Materials: (projects naturally depend upon the medium you are using; however the museum should have wall areas, listening areas and shelving for 3-d displays.

Objectives: (add your own objectives to the project)

- Students gain an appreciation of not only their artist's medium, but those of others as well.
- Students work together to present their work to the community.

Procedures:

1. You might want a committee that will actually plan the "museum." Where, what type of displays, open to the community or closed to the school; times of presentations, advertizing needed – these are all concerns to be addressed before the project presentation.
2. Once students have read about their artist, they should probably do additional research to see and hear all they can about the artist's medium.
3. Students may then work individually, partners, or small groups within the grade band to create exhibits for the museum.
4. Be sure that all entries are labeled not only with the artist for whom the project was designed, but also the local artist, age, class, etc.
5. A display of photographs of the project while in action would be very impressive to the community.

Online Resources:

- http://americanart.si.edu/education/activities/podcasts/ Did you know that you can have your students make podcasts of their work and display on the Smithsonian American Art. Check this out and see if it fits your timeline.

Project Title: _____

Student Name: _____

Date: _____ Teacher: _____

Math MATTERS Project Rubric

	1 point	2 points	3 points	4 points	Score
Amount of Project Completed	Little effort made, most items are unaddressed or incomplete	Some parts of the project were addressed and complete	Most of the project parts were addressed and complete, a few may be missing	All parts of the project were addressed and complete	
Quality of Work	Could not read project, project poorly organized	Project was partially organized, many parts were confusing or unrelated	Project was mostly organized, a few parts may be confusing or unrelated	Project highly organized and all parts clearly related to the topic	
Use of Time and Effort	Did not use time effectively	Used some time effectively, but was often off task	Used most time effectively, occasionally off task	Student used all available time to the fullest	
Presentation	Student could not explain own project	Student needed to be prompted to explain own project	Student explained project with little prompting	Student easily explained the project and could answer questions	
				Total	

A total score of 12 or more points is needed to consider the project complete.

Notes:

Rubric is an adaptation of Rcampus Math Project Rubric: Fraction Word Problems
http://www.rcampus.com/rubricshowc.cfm?code=F945W8&sp=true&

Materials
- **BLM** Pattern Block Pizazz (1 of 3) Measurement Lab Record Sheet
- **BLM** Solve It! Problems 1-2
- **BLM** Fraction Action and *X* Marks the Spot
- **BLM** Lessons 1-3 CGI Biography and Artwork of M.C. Escher http://www.mcescher.com/

Math Objectives
- Solve problems using a measurement tool and calculating measurements.
- Model and solve multistep word problems.
- Solve problems involving fractions, ratios, and proportions.
- Solve for a variable.
- Compose and decompose numbers.

Language Objectives
- Speak to partners, teacher, and class using vocabulary.
- Discuss problem solving process and strategies.

Math Vocabulary
fraction
ratio
percent
tessellation
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
lithograph
predecessors
tapestries
mural
architecture
linoleum
perspective

Assessed TEKS for this Unit
- 5th – 5.3H*, 5.3K*
- 6th – 6.3A, 6.5B*, 6.3B, 6.3C

**denotes Revised 2014 TEKS*

Unit 2, Lesson 1 — Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post-assessment. They are not optional.

ESSENTIAL

Measurement Lab
- **Lesson 1 – *Pattern Block Pizazz (1 of 3)* (5th assessment items 1,2,3)**
- Lesson 2 – Pattern Block Pizazz (2 of 3) (6th assessment item 5)
- Lesson 3 – Pattern Block Pizazz (3 of 3) (6th assessment item 5)

Lesson 1 Materials
Wooden pattern blocks are ideal for this activity; however plastic can work if the balance is sensitive enough. If balance is not available omit that part of the activity. Students need this information for TV Lesson.
- pattern blocks (at least 1 hexagon, 2 trapezoids, 3 rhombi, 6 triangles)
- balance
- black, red, blue, and green markers

Lesson 1 Student Pairs
Be explicit with students that today's activity is an exploration into fractions *(part to whole comparison).*
1) Students answer questions on BLM using the pattern blocks to prove their answers concretely.
2) Use a picture to justify answer
3) Measure the weight of the pattern blocks with a balance to prove equivalency.

Solve It! Multi-step problem solving
- **Lesson 1 – *pairs, 2-step*** (6th assessment item 7)
- Lesson 2 – pairs, 2-step (6th assessment item 4)
- Lesson 3 – independent, 2-step (6th assessment item 8)

Fraction Action
- **Lesson 1 – *(5th assessment item 6)***
- Lesson 2 – (5th assessment item 6)
- Lesson 3 – (5th assessment item 6)

***X* Marks the Spot**
- **Lesson 1 – *(5th assessment item 6)***
- Lesson 2 – (6th assessment item 2,4,7,8)
- Lesson 3 – (6th assessment item 2,4,7,8)

ELPS (*English Language Proficiency Standard*) 1G, 2F, 2G, 3C, 3E, 3F, 4I **CCRS** *(College and Career Readiness Standards)* CROSS-CURRICULAR I.A.1., I.C.2., I.C.3., II.D.1 ELA II.A.2., II.A.4., II.B.2. MATH I.A.2., I.C.1., II.A.1., II.B.1., IV.B.1., VII.A.1., VIII.A.2., VIII.B.2.	**Unit 2, Lesson 1** **Grades 5-6** **Daily Routine** - continued **----------** **CGI** • **Lesson 1 – Lesson 1 - Part-Part-Whole, Part Unknown (5th grade Assessment Item 4)** • Lesson 2 – Rate, Partitive Division (6th grade Assessment Item 6) • Lesson 3 – Compare, Referent Unknown (5th grade Assessment Item 5) **----------** **The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.** **----------** **OPTIONAL** **Target Number** • **Lesson 1 – *Target Number 48*** • Lesson 2 – Target Number 20 • Lesson 3 – Target Number 100 **Money Matters** (*If you have a full program and wish to use this optional activity, you will find BLMs and Explanations on MAS Space*.)

CGI Problems for *The Graphic Work of M C Escher by M.C. Escher*

Part-Part-Whole	*Whole Unknown* Escher made 448 lithographs, wood cuts and wood engravings and 2,364 drawings and sketches. How many works of art did he create?		*Part Unknown* Escher drew 137 Regular Division Drawings in his lifetime. He drew some in different parts of the world and 62 in Switzerland. How many did he draw when he was not in Switzerland?
	Multiplication	**Measurement Division**	**Partitive Division**
Grouping and Partitioning	In his early years, Escher made a wood cut called, "The Eight Heads." If __ wood cut prints sold, how many heads would be displayed? 387 942 11,007	The MC Escher Foundation was the driving force behind the very successful exhibitions that were held in the Netherlands in 1998. 342,814 people saw the exhibits. If on average 947 people saw the exhibits per day, how many days were the exhibits open?	Between 1916 and 1972, Escher created approximately 2649 pieces of art. About how many did he average per year?
Rate	If it took Escher __ hours to create a wood cut, how long would it take him to create __ wood cuts? 76.3, 124 109.6, 258	Escher made 137 lithographs. He made __ lithographs per __ hours. How many hours did it take him? Restate your answer to the nearest minute. 3, 56 5, 72 8, 102	It took Escher 56 years to create 2908 drawings and sketches. If he made the same number each year, about how many sketches and drawings did he create per year?
Price	Escher sold __ prints of his work for an average of $__ each. How much money did he take in? 5,309, 89.95 19, 242, 57.49	Escher took in $__ from selling prints. Each print sold for $__. How many prints did he sell? 599,529.65 39.95 25,149.95 27.79	Escher took in $__ from selling prints. He sold __ prints. How much did each print sell for? 75,670.40 1088 74,384.42 979
Compare	*Difference Unknown* Escher created __ lithographs and __ wood cuts. How many times more wood cuts did he make than lithographs? 55, 92 79, 152 81, 170	*Quantity Unknown* Escher took __ hours to make a linoleum cut. It took him __ times longer to make a wood carving. How long did it take to make a wood carving? 9.3, 3.1 4.6, 6.9 23.5, 2.75	*Referent Unknown* Escher carved __ spheres per 42 hours. That is __ times slower than it took him to do the same number of etchings. How long does it take him to do one etching? 4, 3 6, 1.5 7, 2.8

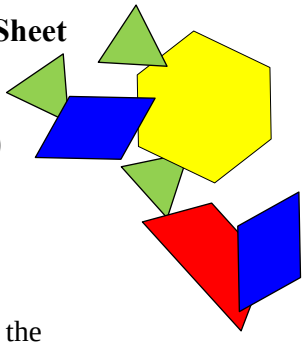
Written by K. Gillam 2014

CGI Problems for *The Graphic Work of M C Escher by M.C. Escher*

Part- Part-	*Whole Unknown*	*Part Unknown*	
	Escher creó 448 litografías y grabados en madera y 2,364 ilustraciones y dibujos. ¿Cuántas obras de arte creó?	Escher dibujó 137 ilustraciones de división regular en su vida. Dibujó en diferentes partes del mundo y 62 de ellas en Suiza. ¿Cuántas ilustraciones hizo cuando no estaba en Suiza?	
	Multiplication	**Measurement Division**	**Partitive Division**
Grouping and Partitioning	En su juventud, Escher creó un grabado en madera titulado, "Las ocho cabezas." Si se vendieron __ impresos de este grabado en madera, ¿cuántas cabezas seria? 387 942 11,007	La Fundación de MC Escher fue la fuerza principal en la creación de varias exhibiciones muy exitosos en los Países Bajos en 1998. 342,814 personas vieron las exhibiciones. Si un promedio de 947 personas asistieron a las exhibiciones en un dia, ¿cuántos dias duraron?	Entre 1916 y 1972, Escher creó aproximadamente 2649 obras de arte. Apoximadamente, ¿cuántas obras creó como promedio en un ano?
Rate	Si a Escher la tomaba __ horas para crear un grabado en madera, ¿cuánto tiempo le tomaría crear __ grabados en madera? 76.3, 124 109.6, 258	Escher hizo 137 litografías. Hizo __ litografías cada __ hora. ¿Cuántas horas le tomó? ¿Cuántos minutos sería? 3, 56 5, 72 8, 102	A Escher le tomó 56 años crear 2908 dibujos e ilustraciones. Si hacía el mismo número cada año, ¿aproximadamente cuántos dibujos e ilustraciones creó cada año?
Price	Escher vendió __ impresos de sus obras por un promedio de $__ cada uno. ¿Cuánto dinero ingresó? 5,309, 89.95 19, 242, 57.49	Escher ingresó $__ de vender impresos. Cada impreso vendió por $__. ¿Cuántos impresos vendió? 599,529.65 39.95 25,149.95 27.79	Escher ingresó $__ de vender impresos. Vendió__ impresos. ¿Por cuánto vendió cada impreso? 75,670.40 1088 74,384.42 979
Compare	*Difference Unknown* Escher creó __ litografías y__ grabados en madera. ¿Cuántas veces más grabados en madera creó que litografías? 55, 92 79, 152 81, 170	*Quantity Unknown* Escher tomó__ horas para hacer un grabado en lino. Le tomó __veces más tiempo hacer un grabado en madera. ¿Cuánto tiempo le tomaba hacer un grabado en madera? 9.3, 3.1 4.6, 6.9 23.5, 2.75	*Referent Unknown* Escher talló __ esferas cada 42 horas. Esto es __ veces más despacio que le tomaba hacer el mismo número de grabados. ¿Cuánto tiempo le toma hacer un grabado? 4, 3 6, 1.5 7, 2.8

Written by K. Gillam 2014

Unit 2 Lesson 1 – Daily Routines – Measurement Lab
One per student



Pattern Block Pizazz (1 of 3) – Measurement Lab Record Sheet

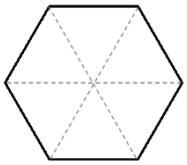
Materials:

- pattern blocks (at least 1 hexagon, 2 trapezoids, 3 rhombi, 6 triangles)
- balance
- black, red, blue, and green markers

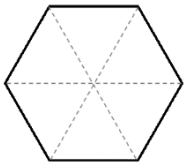
Task:

- Work with your group and use the pattern blocks to help your group answer the questions below.
- Use a picture to justify your answers. Choose corresponding colors to the blocks and the black marker to show separation between shapes.
- Measure the weight of the pattern blocks using the balance to prove equivalency.

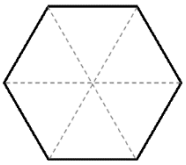
1. How many trapezoids does it take to make 1 hexagon?
   Color the diagram to justify your answer.
   Use the balance to prove that 1 hexagon = the number of trapezoids you answered.



2. How many rhombi does it take to make 1 hexagon?
   Color the diagram to justify your answer.
   Use the balance to prove that 1 hexagon = the number of rhombi you answered.



3. How many triangles does it take to make 1 hexagon?
   Color the diagram to justify your answer.
   Use the balance to prove that 1 hexagon = the number of triangles you answered.



4. What fractional part of the hexagon does 1 trapezoid represent? 2 trapezoids?

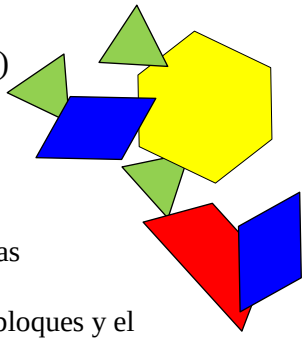
5. What fractional part of the hexagon does 1 rhombus represent? 2 rhombi? 3 rhombi?

6. What fractional part of the hexagon does 1 triangle represent? 2 triangles? 3 triangles? 6 triangles?

You will need this sheet during the TV Lesson.

Unidad 2 Lección 1 – Rutinas diarias – Laboratorio de medición
1 por estudiante

Entusiasmo con bloques patrón (1 de 3) - Hoja de registro del laboratorio de medición



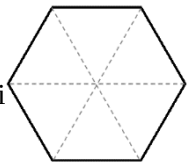
Materiales:

- bloques patrón (al menos 1 hexágono, 2 trapezoides, 3 rombos, 6 triángulos)
- balanza
- marcadores negro, rojo, azul y verde

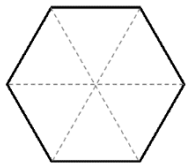
Tarea:

- Trabaja con tu grupo y usa los bloques patrón para ayudar a tu grupo a responder las preguntas siguientes.
- Usa un dibujo para justificar tus respuestas. Elige colores que correspondan a los bloques y el marcador negro para mostrar la separación entre las formas.
- Mide el peso de los bloques patrón usando la balanza para probar la equivalencia.

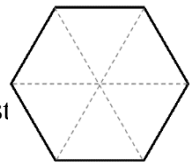
1. ¿Cuántos trapezoides se necesitan para formar 1 hexágono?
   Colorea el diagrama para justificar tu respuesta.
   Usa la balanza para probar que 1 hexágono = el número de trapezoides que respondi



2. ¿Cuántos rombos se necesitan para formar 1 hexágono?
   Colorea el diagrama para justificar tu respuesta.
   Usa la balanza para probar que 1 hexágono = el número de rombos que respondiste.



3. ¿Cuántos triángulos se necesitan para formar 1 hexágono?
   Colorea el diagrama para justificar tu respuesta.
   Usa la balanza para probar que 1 hexágono = el número de triángulos que respondist



4. ¿Qué parte fraccional del hexágono representa 1 trapezoide? ¿2 trapezoides?

5. ¿Qué parte fraccional del hexágono representa 1 rombo? ¿2 rombos? ¿3 rombos?

6. ¿Qué parte fraccional del hexágono representa 1 triángulo? ¿2 triángulos? ¿3 triángulos? ¿6 triángulos?

Necesitarás esta hoja durante la Lección TV.

Unit 2 Lesson 1 – Daily Routines – Solve It! (pairs) **5-6**
1 per partner pair

Problem 1:
Partner #1 - Problem 1:
AmeriCredit offered Angela a 25% interest rate on a credit card. She knew that wasn't a good rate, but decided to use numbers to prove it. She estimated she would use the credit card for gas at $100 a month. How much interest will be added to her credit card bill? Use a bar model to answer the question.
**Hint – How many 25's make 100%? Divide your bar into that many pieces. Label your benchmark values first! Think in 25's.*

- What is the answer to the question? Show your solution strategy.

Problem Solution (Partner #1) Name:	**Solution Verification** (Partner #2) Name:

Problem 2:
How much will Angela's credit card bill be after 25% interest is added onto her balance?

- What do you need from Problem 1 to solve Problem 2?
- Be sure to verify the answer to Problem 1 before solving Problem 2.
- What is the answer to the question? Show your solution strategy.

Problem Solution (Partner #2) Name:	**Solution Verification** (Partner #1) Name:

Unit 2 Lesson 1 – Daily Routines – Solve It! (pairs) **5-6**
1 per partner pair

Partner #1 - Problema 1:
AmeriCredit le ofreció a Angela una tasa de interés del 25% en una tarjeta de crédito. Ella sabía que no era una buena tasa, pero decidió usar números para demostrarlo. Ella decidió que usaría la tarjeta de crédito para comprar gasolina por $100 al mes. ¿De cuánto será el interés que se agregue a su cuenta? Usa un modelo de barra para responder la pregunta. **Pista - ¿cuántos 25s forman el 100%? Divide tu barra en esa cantidad de piezas. ¡Etiqueta primero los valores de tus puntos de referencia! Piensa en 25s.*

- ¿Cuál es la respuesta a la pregunta? Muestra tu estrategia de solución.

Solución del problema (#1) Nombre:	**Verificación de la solución (**#2**)** Nombre:

Problem 2:
¿De cuánto será la cuenta de la tarjeta de crédito de Angela después de que se agregue el 25% de interés a su saldo?

- ¿Qué necesitas del problema 1 para resolver este problema?
- Asegúrate de verificar la respuesta del problema 1 antes de resolver este problema.
- ¿Cuál es la respuesta a la pregunta? Muestra tu estrategia de solución.

Solución del problema (#1) Nombre:	**Verificación de la solución (**#2**)** Nombre:

Unit 2 Lesson 1 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

Materials:
None for this activity

Task:

Blake ran 4.3 miles on Saturday, $5\frac{1}{4}$ miles on Sunday, and 7.2 miles on Tuesday. How many miles did he run total for all 3 of those days?

X Marks the Spot

Solve for x.

$$x + 7.6 = 11\frac{4}{5}$$

Unit 2 Lesson 1 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

Materiales:
ninguno para esta actividad

Tarea:

Blake corrió 4.3 millas el sábado, $5\frac{1}{4}$ millas el domingo, y 7.2 millas el martes. ¿Cuántas millas corrió en total durante los 3 días?

X Marca el sitio

Resuelve para *x*.

$$x + 7.6 = 11\frac{4}{5}$$

Materials
- **BLM** M.C. Escher Biography (option)
- 8 ½ x 11 blank page for each student
- Small sticky notes (optional)
- pencil
- **BLM** Bar Model-Percents

Literature Selection
Biography and Artwork of M.C. Escher
http://www.mcescher.com/

Math Vocabulary
fraction
ratio
percent
tessellation
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
lithograph
predecessors
tapestries
mural
architecture
linoleum
perspective

ELPS (*English Language Proficiency Standard*) 1G, 2F, 2G, 3C, 3E, 3F, 4I, 5B, 5C, 5F

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR II.A.2., II.A.3., II.A.5., II.B.2.
ELA I.A.1., I.A.2., II.A.3., II.A.7., II.A.8., II.A.9, III.B.2.

Technology Option
https://www.mcescher.com
https://www.wordsmyth.net

Unit 2, Lesson 1 — Grades 5-6

Classroom Lesson

Every day teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

Math Objectives:
- Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models.
- Represent ratios and percents with concrete models, fractions, and decimals.

Language Objectives:
- Read and discuss with group members a piece of nonfiction text.
- Read a biography and identify information based on key words in questions: Who, what, when, where, why.
- Listen to questions, generate answers in writing, and orally report the answers to class members.

Building Background – Vocabulary & Literature
Teacher displays either the BLM TV Lesson Verbum or one artwork piece from www.mcescher.com on the computer for all students to view.

Say, "This work was made by a graphic artist by the name of Maurits Cornelis Escher or also known as M.C. Escher."

Ask, "What is the first thing you notice about his work?" Accept all responses.

Ask, "How do you think he created this piece of art?" Accept various answers and continue to prompt reasoning for students' responses. For example, students might state he used a pencil because it's black and white.

Ask, "What do you think M.C. Escher's message is to us in this art work? Or What is he trying to tell us that he sees?" Allow for various responses.

Say, "This week we have a special literature selection that is on the website www.mcescher.com *(write the site on the board)*. The selection is called a biography."

Ask, "What is a biography?" Accept responses and prompt students to add previous biographies read. Clarify that a biography is the written story of events and facts from a person's life.
Write on the board: *bios = life -graphia= writing*

Teacher Note Utilize the M.C. Escher biography on the website for initial reading. The **BLM M.C. Escher Biography** enables the students to view closer if computers are not available and in the event the Internet is not in service. **Teacher Note** As specified in the "percent" vocabulary definition, the TM Lesson examples are without context. This is because any type of percent context is applicable to this strategy. The examples could represent tax, interest, tips, and many more percent situations.	**Unit 2, Lesson 1** **Grades 5-6** **Classroom Lesson -** continued Say, "The word biography originally comes from the Greek 'bios' meaning life *(point to the board)* and the Greek – graphia, meaning writing. This week we will be reading a brief writing of events and facts from M.C. Escher's life. It is his biography and it is written by another person." Say, "First, let's read through the vocabulary words from this selection." Display the word cards in a pocket chart or on the board. Read aloud the words at an even pace, prompt the students to echo the words after you. Say, "Great! Now let's do something a bit different today. You will read the words as a group aloud to me." Prompt through pointing to the words *(in the same order just read)* one at a time for students to read them aloud to you. Say, "Fantastic! This time I will point randomly to the words and I want you to read them to me. We will read for the words repeatedly for thirty seconds…ready, set-. . ." Start pointing randomly to cards. Students continue to read the cards to you for the full thirty seconds. When time is up say**,** "Stop! Awesome Job." Direct students to take out one blank sheet of 8 ½ x 11 paper *(notebook paper is fine)*. Students will fold the paper in half vertically, left to right. **Comprehensible Input - Vocabulary & Literature** Throughout the unit, you will help students focus on the reading skill of summarization of an expository piece. Students will learn in this lesson the skill of split note taking to identify the main idea and four to five supporting details. The note taking activity is a "means to the end" not the "end." Say, **"**On the left side of your paper we will write down a few questions about M.C. Escher based on what we survey or see on the website. As we read through the biography, we will write notes on the right side of the paper to answer the questions." **Listening Comprehension (strategy modeling)** Say, "It will be helpful to know what type of questions we want to write on the left side of our paper. We do not want just "yes" "no" answers for our questions. Our goal is to gather information about M.C. Escher." Ask, "What are some great question words that you know?" Allow students to respond.

Unit 2, Lesson 1 — Grades 5-6

Classroom Lesson - continued

Teacher Note
The bar represents more than just the requested values. You can ask students several questions to make sure they understand how to utilize this amazing tool.

- What is 40% of 400?
- What is 70% of 400?
- What is 45% of 400?
- What is 95% of 400?

…so on and so forth…

Guide students to identify "Who," "What," "When," "Where," "Why," and "How" are great question words to begin our wording. Write the words on the board and what each word indicates, for example "Who" indicates the answer will include a person's name. Explain to students we might use some of these question words more than once and some not at all.

Have students either survey one computer open to the website www.mcescher.com or have one computer per group, if available.
Guide students through the website, first surveying the biography section located within the tab, About M.C. Escher.
Think aloud as you survey the website to generate two questions for the left side of the note taking page. Write the questions on the board for the students to copy. See samples to the left.

Sample Questions (Biography):

- Where has M.C. Escher worked or lived?
- Where does he get his ideas for his artwork?

Guide students to the section entitled, Escher At Work. DO NOT PLAY THE VIDEO.
Say, "Oh, this is M.C. Escher working on one of his projects. I wonder what different types of artwork he made. How could I word this as a question?" Allow students to assist you with wording your question. Write the question on the board.

Sample Questions (News):

- Where can I find M.C. Escher's artwork on display?
- How has his work inspired others?

Guide students to the section, About Escher, clicking on the main tab at the top of the page.

Say, "He looks as if he is thinking out an idea for an artwork. I do this sometimes when I'm thinking - I look out the window or off to the side. I wonder how he became an artist. How could I word this question?" Allow students to assist you with the wording of your question. Write the question on the board.

Throughout reading you will guide students in recognizing key vocabulary in text. Students will place a small sticky note above the vocabulary word in the text. This strategy will later be utilized to identify any words the students find unfamiliar (or sticky word) and might not be a vocabulary word listed.

Guide students to the section, News, clicking on the main tab at the top of the page.

Say, "Scroll *(or follow along as I scroll)* through this section. Take one minute and discuss what question you have based on this section." Allow students think time. Then prompt them to share their questions. See samples to the left.

Sticky note example for vocabulary word: *lithograph*

Say, "Great! We have surveyed the parts of the website that we will be reading and generated some great questions to guide our learning. Let's read through the questions to make sure we can understand them and they make sense." Read through each question together with students.

During his lifetime, M.C. Escher made 448 lithographs, woodcuts and wood engravings.

Teacher Note
There are so many variations when solving with a bar model. One variation might be that the student divides 400 by 10, but immediately recognizes he/she can double that amount to find 20%. Any pathway is appropriate and acceptable.

Unit 2, Lesson 1 Grades 5-6

Classroom Lesson - continued

Say, "Before we begin reading the text, let's think back to the vocabulary strategy we did while reading in the last unit. What was that strategy?" Hold up small sticky notes. Allow students to respond.
Strategy is explained to the left. Understandably, sticky notes might not be used on the computer. When students bring this up, ask them for an alternative plan. Allow them to problem solve. Possible solution is to write the words on the board or on a separate sheet of paper and indicate the paragraph/line word is found.

Say, "Let's being with reading the Biography of M.C. Escher."

Read the first three paragraphs stopping after reading "…time he lived and traveled in Italy."

Monitoring for Comprehension

- Teacher Think Aloud: Hold on - I think I just read a response to one of our questions. Let me look back at the questions.
- Read through until you locate a question regarding where M.C. Escher worked or lived. Write the response to the question on the right side of the note taking page, next to the question it answers.
- Teacher Think Aloud: I noticed that as I read over the second paragraph containing names of his artwork, the words are highlighted. If I click them, I wonder if I will be able to see examples of his work. Let's reread this paragraph and click on the words.

Read the fourth paragraph, clicking on the words that indicate names of his artwork.

- Teacher Think Aloud: I read the word 'lithograph.' I also noticed the word 'lithograph' along with the title to the two pieces of work mentioned at the beginning of this paragraph. Look here it is under this photo - highlight the word under the artwork to the right of M.C. Escher's profile photo. This is an interesting word. I'm pretty sure it means the work he created, but I wonder where it comes from. Let's sticky it *(or write it on the board)* and come back to it later.

Read the fifth paragraph.

- Teacher Think Aloud: Oh wait - I just read the answer to another question I think. Let's see.
- Read through the questions until you locate, "What different types *(or productions)* of artwork has M.C. Escher made?" Then write the answer to the question to the right on the note taking page.
- Teacher Think Aloud: I read a statement 'like some of his famous predecessors'- then the author listed some other artists. I wonder what a predecessor means. It must mean a person, but what kind of person? Let's note this as one of our words to explore.

Read the sixth paragraph.

- Teacher Think Aloud: Wow! This paragraph contained a lot of information. I think I was most surprised by the fact M.C. Escher failed his high school exams. Did we learn an answer to one or more of our questions? Read through our questions and tell your neighbor which question(s) we can answer.
- Allow students time to share with their neighbor then guide them in answering the following question**:** *How did M.C. Escher become a graphic artist?* This paragraph discusses where he began his studies, but the information is important for understanding his pathway to education. Add to the answer for question: *What different types of artwork has M.C. Escher made?*
- Teacher Think Aloud: There were three words here that I remember from our vocabulary list. Highlight the words *tapestries* and *mural.* Reread the sentence which contains both words. From this sentence I can tell these are examples of his artwork, but I'm not sure what they look like. Highlight the word *architecture*. This word was part of the title of the school he attended. I'm not sure what the meaning of architecture is.

Read paragraphs seven and eight.
Monitoring for comprehension:

- Teacher Think Aloud: What questions can we answer from these two paragraphs? I think I read the answer to possibly two questions. Turn to your neighbor and point or tell them the questions you think we can answer. (*How did M.C. Escher become an artist? Where has M.C. Escher worked or lived?)*
- Allow the students time to think and pair, then ask them to share their thoughts. Guide students in writing their responses next to the appropriate questions.
- Teacher Think Aloud: Did you hear or read a word that was on our vocabulary list? I did. Highlight the word, *linoleum*. Have you heard this word before this reading? Allow for response. I'm not sure I know the meaning of this word…I understand that it's something that M.C. Escher created and showed to his art teacher. I cannot think of a specific example of *linoleum*, so I'm going to note where I found it.

Read paragraphs nine, ten, and eleven.
Monitoring for comprehension:

- Teacher Think Aloud: I can now answer another question from our note taking page. Turn to your neighbor and identify one question we can answer. (*Where does M.C. Escher get his ideas for his artwork?)* I also hear more information to add to one of our previously answered questions. (*Where has M.C. Escher worked or lived?)*

- Allow the students time to think, pair, and share their thoughts with the class. Guide students in writing their response to the appropriate question. Students should have just their two questions from the 'news' section remaining at this point.

Read paragraphs twelve and thirteen.
Monitoring for comprehension:

- Teacher Think Aloud: I read in the last paragraph that he played with 'architecture' which is one of our words we have identified to study and he played with 'perspective.' I know I've heard this word during reading. Last year I remember discussing the author's perspective. I wonder if this is the same meaning here. Let's add this word's location to our list.

Practice and Application – Vocabulary & Literature
Direct the students to reread the questions with their group or partner, comparing responses and adding if needed. As a class reread the vocabulary words identified for this selection. Now return to the section with the video of M.C. Escher at work. Play the short video for the students.

Say, "Now it is your turn to answer the remaining two questions on your note taking page. Together we will read the 'News' section of the website and locate the information to answer

- Where can I find M.C. Escher's artwork on display?
- How has his work inspired others?"

Guide students to the 'News' section of the website. Read aloud/view with students or in groups the section(s) regarding inspiration. Then, guide students in reading the section regarding the museum, The Hague. ***Note:*** it is not necessary to read all the selections on the News in their entirety if time does not allow. Explain to students that they will be allowed to revisit this site and read more and look at more of M.C. Escher's artwork during independent reading time.

Allow students time to complete the written answers to the remaining questions.

Say, "Tomorrow we will explore our highlight vocabulary words and determine their meaning in this reading."

Teacher Note
The bar represents more than just the requested values. You can ask students several questions to make sure they understand how to utilize this amazing tool.

- What is 40% of 400?
- What is 70% of 400?
- What is 45% of 400?
- What is 95% of 400?

…so on and so forth…

ELPS (*English Language Proficiency Standard*) 1E, 2H, 3D, 3I, 3J

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.C.3
MATH I.A.1., II.D.1., IV.B.1., VIII.A.1., VIII.A.2., VIII.B.2

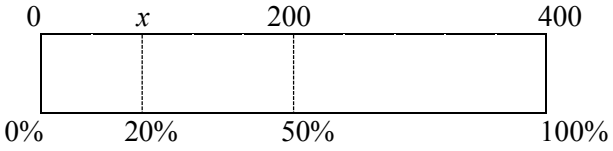
Transition to Math

Review percent concepts. Students will explore the strip diagram *(bar model)* more during this lesson. If they have questions about the Solve It! problems from today's Daily Routines activities take time to address those concerns first. The numbers used in those questions are very easily compatible so students can focus on setting up the bar model correctly. Walk students through the review problems on the BLM. Bring to their attention that so far through Unit 1 and 2 they have had experience finding the benchmarks 10% and 25% on the bar model, but it can be divided into any number of equal sections depending on the problem situation. The Transition to Math problems are equations only to allow students the opportunity to focus on the strategy without sifting through a story.

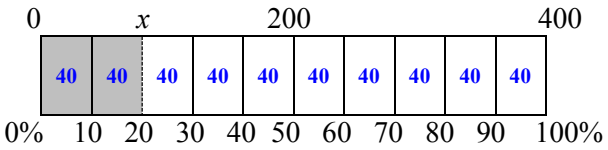
Problem #1 – Solution Strategy #1

20% of 400 = ???

Our first strategy is to break the bar into 10% "chunks" since 20% is easy to find from that point. Set up the bar model as shown, labeling key components *(what you know, what you want to know, and any helpful benchmarks)*.



Reasonableness and number sense tells us that the benchmark 25% would equal 100, so 20% will be a little less than 100. Divide model into ten equal sections and have students discuss how they can easily calculate 400 divided into ten equal sections. Label "chunks" as shown.



10 equal sections of 40 will total 400. The shaded region represents 20% of 400, which equals 80.

Teacher Note

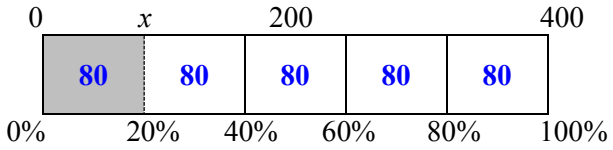
Be explicit that $\frac{1}{3}$ as a decimal and percent is actually 0.333333… repeating and 33.333…% repeating. Most of their experiences in math will assume 33% as the equivalent to one-third unless stated otherwise. A calculator would most likely be available in those situations. The repeating decimal does have an effect on the final outcome if needing an exact value.

Problem #1 Solution Strategy #2

For students who are more comfortable in their multiplicative thinking, they may prefer to divide their model into only five sections representing "chunks" of 20%. This will eliminate the last step of combining partials like in Solution Strategy #1 *(40 + 40)*.

Follow the same steps as before, only asking students how they would divide 400 by 5 instead of 10. If students are fluent when dividing numbers by 10, then nudge them toward doubling which leads them to this shorter pathway. Otherwise, build their number sense by asking them to think of how many fives it would take to make 40. *(8)* Therefore, it would take 80 fives to make 400. Each section represents a value of 80.

50% is still labeled as it is always the first go-to benchmark value even though its placement seems unnecessary in this example. It makes dividing the bar into five sections visually tricky, so students may want to leave it off until after they label the five "chunks." Benchmarks give reasonableness to the problem situation. Bar model shown below.

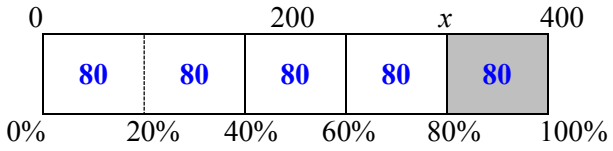


Shaded region represents 20% of 400, which equals 80.

Now ask students to view the bar model from a different perspective.

"What if I wanted to take 20% OFF of 400? How can this model help you figure out that answer?" *(We know 20%=80, so we can subtract that from 400 or we can look at the opposite end of the bar and work backwards.)*

Model shown.



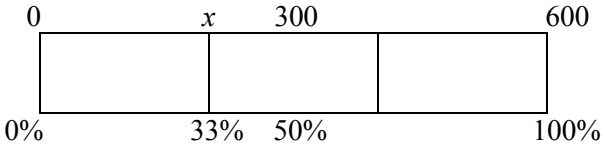
Shaded region represents 20% OFF of 400, which equals 320. Or they can focus on the unshaded portion of four groups of 80 and arrive at 320.

Problem #2

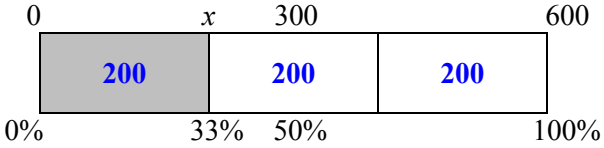
33% of 600 = ???

The purpose of this problem is to introduce another benchmark fraction/decimal/percent that students haven't used during any of the units thus far. 33% will be approximated to $\frac{1}{3}$ with the understanding that it should actually be 33.333…%.

Have students discuss how to divide the bar in order to represent 33%. *(thirds)* Follow the same steps as before. Label all important information. Again, 50% should be labeled to shown reasonableness. If it interferes with the division of the sections, wait until afterwards to write it down. Bar shown below.



Ask students what 600 would be if broken into three equal "chunks." *(200)* "What does 200 mean? What does it represent?" *(value of each section)* Bar model shown below.



Shaded region represents 33% *(or one-third)* of 600, which equals 200. Time permitting; ask students several questions about the model as it can be used in a number of different ways. See Teacher Note in sidebar for example questions.

Now ask students to view the bar model from a different perspective.

"What if I wanted to take 33% OFF of 600?" Follow steps as outlined during Problem 2.

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

lithograph

predecessors

tapestries

mural

Unit 2 Lesson 1 – Classroom Lesson
Duplicate on cardstock and cut apart for word cards.

architecture

linoleum

perspective

litografía

antepasados

tapices

mural

Unit 2 Lesson 1 – Classroom Lesson
Duplicate on cardstock and cut apart for word cards.

arquitectura

linóleo

perspectiva

Unit 2 Lesson 1 – Classroom Lesson
One copy per pair of students

M.C. Escher Biography

Maurits Cornelis Escher (1898-1972) is one of the world's most famous graphic artists. His art is enjoyed by millions of people all over the world, as can be seen on the many web sites on the internet.

He is most famous for his so-called impossible constructions, such as *Ascending* and *Descending*, *Relativity*, his Transformation Prints, such as *Metamorphosis I*, *Metamorphosis II* and *Metamorphosis III*, *Sky & Water I* or *Reptiles*.

But he also made some wonderful, more realistic work during the time he lived and traveled in Italy.

Castrovalva for example, where one already can see Escher's fascination for high and low, close by and far away. The lithograph *Atrani*, a small town on the Amalfi Coast was made in 1931, but comes back for example, in his masterpiece *Metamorphosis I* and *II*.

M.C. Escher, during his lifetime, made 448 lithographs, woodcuts and wood engravings and over 2000 drawings and sketches. Like some of his famous predecessors, - Michelangelo, Leonardo da Vinci, Dürer and Holbein-, M.C. Escher was left-handed.

Apart from being a graphic artist, M.C. Escher illustrated books, designed tapestries, postage stamps and murals. He was born in Leeuwarden, the Netherlands, as the fourth and youngest son of a civil engineer. After 5 years the family moved to Arnhem where Escher spent most of his youth. After failing his high school exams, Maurits ultimately was enrolled in the School for Architecture and Decorative Arts in Haarlem.

After only one week, he informed his father that he would rather study graphic art instead of architecture, as he had shown his drawings and linoleum cuts to his graphic teacher Samuel Jessurun de Mesquita, who encouraged him to continue with graphic arts.

After finishing school, he traveled extensively through Italy, where he met his wife Jetta Umiker, whom he married in 1924. They settled in Rome, where they stayed until 1935. During these 11 years, Escher would travel each year throughout Italy, drawing and sketching for the various prints he would make when he returned home.

Many of these sketches he would later use for various other lithographs and/or woodcuts and wood engravings, for example the background in the lithograph *Waterfall* stems from his Italian

period, or the trees reflecting in the woodcut *Puddle*, which are the same trees Escher used in his woodcut "*Pineta of Calvi*," which he made in 1932.

M.C. Escher became fascinated by the regular Division of the Plane, when he first visited the Alhambra, a fourteen century Moorish castle in Granada, Spain in 1922.

During the years in Switzerland and throughout the Second World War, he vigorously pursued his hobby, by drawing 62 of the total of 137 Regular Division Drawings he would make in his lifetime.

He would extend his passion for the Regular Division of the Plane, by using some of his drawings as the basis for yet another hobby, carving beech wood spheres.

He played with architecture, perspective and impossible spaces. His art continues to amaze and wonder millions of people all over the world. In his work we recognize his keen observation of the world around us and the expressions of his own fantasies. M.C. Escher shows us that reality is wondrous, comprehensible and fascinating.

Unit 2 Lesson 1 – Transition to Math
One per student

Bar Model – Percents

Students work with teacher and peers to create bar models for example problems.

Problem #1 Solution Strategy #1: 20% of 400 = ???

Problem #1 Solution Strategy #2: 20% of 400 = ???

Problem #2: 33% of 600 = ???

*Explain how you were still able to use the bar models when your teacher asked you to take the percentage OFF of the given value.

Unit 2 Lesson 1 – Transition to Math
One per student

Modelo de barra – porcentaje

Los estudiantes trabajarán con el maestro y sus compañeros para crear modelos de barra para los problemas de ejemplo.

Problema #1 Estrategia de solución #1: 20% de 400 = ???

Problema #1 Estrategia de solución #2: 20% de 400 = ???

Problema #2: 33% de 600 = ???

*Explica cómo aún pudiste usar los modelos de barra cuando tu maestro te pidió RESTAR el porcentaje del valor dado.

Materials
- picture of *Verbum* by M.C. Escher
- **BLM** Pattern Block Pizazz (1 of 3)-Measurement Lab Record Sheet
- **BLM** Fraction Frenzy
- pattern blocks (hexagons, trapezoids, rhombi, triangles)
- black, red, blue, and green markers

Math Vocabulary
fraction
ratio
percent
tessellation
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
lithograph
predecessors
tapestries
mural
architecture
linoleum
perspective

ELPS (*English Language Proficiency Standard*) 3C, 3D, 3F, 3G, 4H

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.2., I.E.1., II.C.1.
ELA I.A.2., I.A.3., II.A.4., III.A.1., IV.A.1., IV.B.1.
MATH II.A.2., II.C.1., II.D.1., IV.B.1., VII.A.1., VII.A.2., VIII.A.3., VIII.A.5.

Teacher Note
The Transition to Math was utilized as a review piece for today. The TV Lesson will start a new concept unrelated to the Transition.

Unit 2, Lesson 1 — Grades 5-6
TV Lesson

Math Objectives:
- Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Building Background
See Teacher Note in sidebar.
Display the picture *Verbum* for students to see either on a projector or as a BLM. Hold a whole group discussion about their mathematical observations of the artwork. Observations may include triangles, hexagons, rhombi, hexagon within a hexagon, etc.

Comprehensible Input
Using the information discovered in the Measurement Lab activity, students will add and subtract fractions with UNLIKE denominators by creating equivalencies with pattern blocks. Review fractional representations very quickly to refresh their memories. **It is important that students use equivalencies that result in a new equation with LIKE denominators**.

"What will be our whole for this activity?" *(hexagon)*
"What part of the whole does the triangle represent?" *(one-sixth)*
"What part of the whole does the rhombus represent?" *(one-third)*
"What part of the whole does the trapezoid represent?" *(one-half)*
"How do the triangles and rhombi relate?" *(2 triangles=1 rhombus)*
"How do the triangles and trapezoids relate?" *(3 triangles=1 trapezoid)*

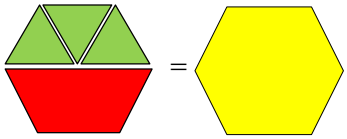
Problem #1
Model how to use the pattern blocks to represent each value in the equation.

"How might I model $\frac{3}{6}$ with the pattern blocks? Which block represents sixths?" *(3 triangles)* "What about $\frac{1}{2}$?" *(trapezoid)* "What about one whole?" *(hexagon)* "How can we use these blocks to prove that statement?"

Let students talk with an elbow partner or group to find a way to prove the equation. Students should quickly come up with the strategy to arrange the triangles and trapezoid in the shape of a hexagon as shown.

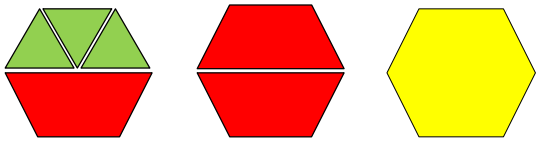
Unit 2, Lesson 1 **Grades 5-6**

TV Lesson - continued



"We proved the equation with blocks, but how do we write it numerically?" Let students discuss with an elbow partner.

(3 triangles = 1 trapezoid, rename $\frac{3}{6}$ *as* $\frac{1}{2}$*.)* Color diagram to show equivalencies and write new equation with like-denominators.



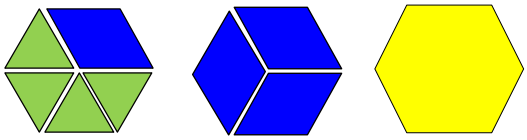
$\frac{3}{6} + \frac{1}{2} = \frac{1}{2} + \frac{1}{2} =$ 1 whole

"How is $\frac{3}{6}$ related to $\frac{1}{2}$?" *(3 out of 6 is half - equivalent fractions)*

After Problem #1 students should be able to model the equivalencies fairly quickly.

Problem #2

Go through the same steps as Problem #1. Ask thought-provoking questions to help students make connections between equivalencies.

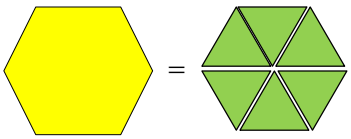


$\frac{4}{6} + \frac{1}{3} = \frac{2}{3} + \frac{1}{3} =$ 1 whole

Problem #3

The next two examples deal with subtraction, therefore the setup is different and students will need to perform the action of "taking away." They can note this on the BLM with arrows.

In this example the hexagon must be recreated with triangles, then the subtraction can take place.



So...

Teacher Note

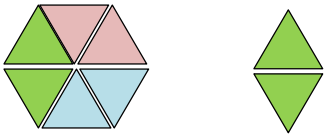
Problem #1 - This can also be converted into triangles instead of trapezoids. New equation would be:

$\frac{3}{6} + \frac{3}{6} = \frac{6}{6} =$ 1 whole

Teacher Note

Problem #2 – This can also be converted into triangles instead of rhombi. New equation would be:

$\frac{4}{6} + \frac{2}{6} = \frac{6}{6} =$ 1 whole

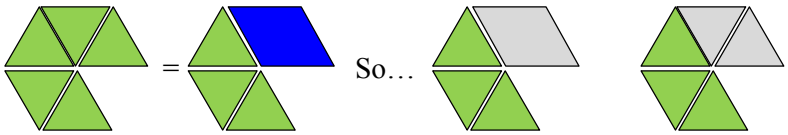


$\frac{6}{6} - \frac{4}{6} = \frac{2}{6}$

Students will need to discuss whether they want to convert to thirds or sixths. If converting to thirds first, the answer must still be related back to the original fraction of $\frac{2}{6}$. This is why the example goes straight to sixths. The original problem subtracts $\frac{2}{3}$ though, so please point out that the picture above models that subtraction when getting rid of $\frac{4}{6}$. The diagram is shaded different colors so the "rhombi" stand out visually.

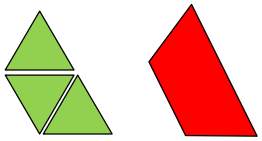
Problem #4

This problem is unique because it doesn't involve one whole. Follow the same steps as the rest of the examples.



$\frac{5}{6} - \frac{1}{3} = \frac{5}{6} - \frac{2}{6}$

Which equals…



$\frac{3}{6} = \frac{1}{2}$

<u>It is important that students use equivalencies that result in a new equation with LIKE denominators.</u>

Pirate's Corner

Create your own un-like denominator addition or subtraction problem and try to stump Captain Portio and the TV teacher!

Objectives

Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 2 Lessons 1-3 – TV Lesson
Duplicate on cardstock and cut apart for word cards.

fraction

ratio

percent

tessellation

scale factor

constant of proportionality

Unit 2 Lessons 1-3 – TV Lesson
Duplicate on cardstock and cut apart for word cards.

fracción

razón

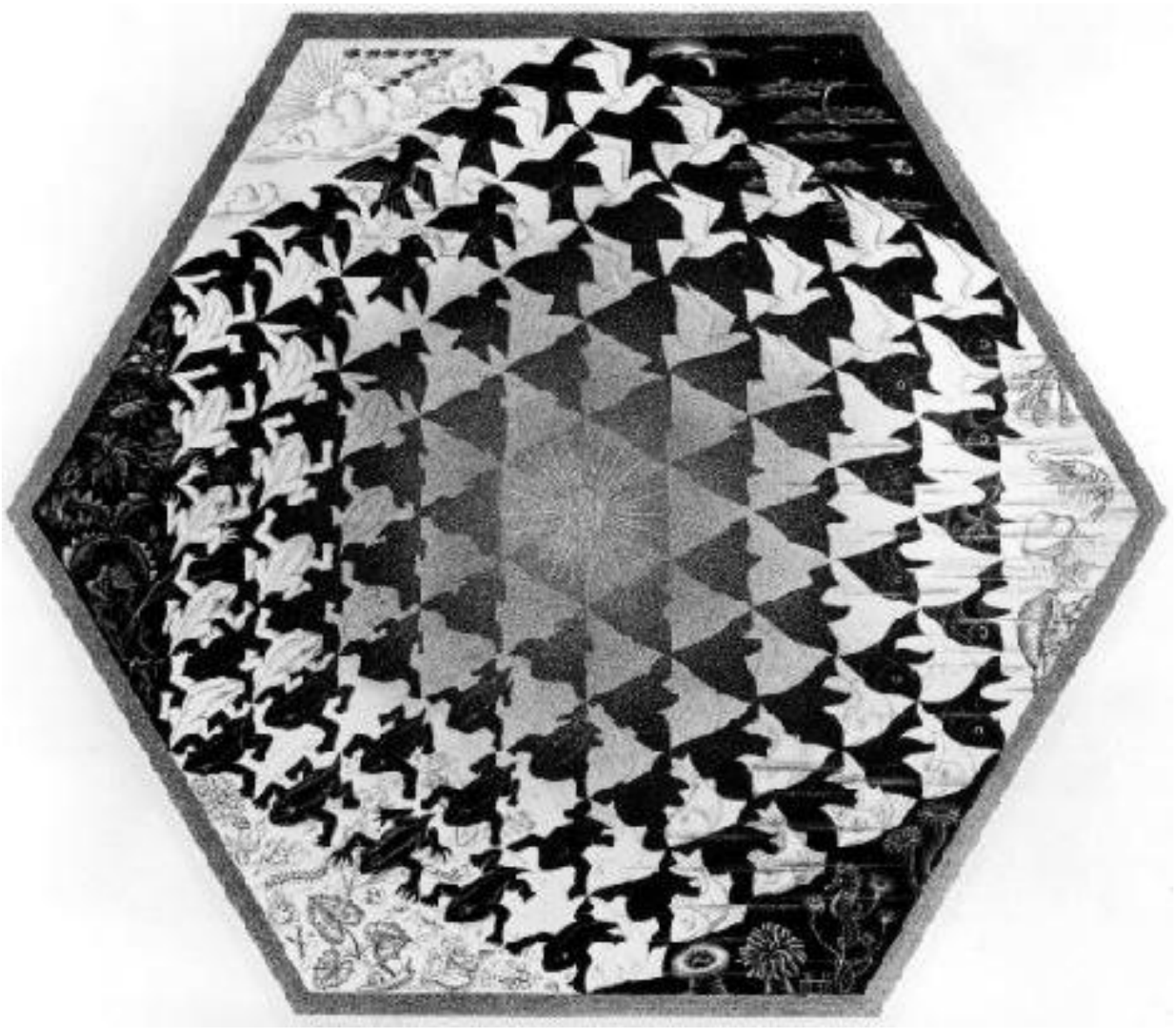
porcentaje

mosaico

factor de escala

constante de proporcionalidad

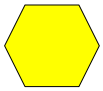
Verbum by M.C. Escher, 1942 Lithograph

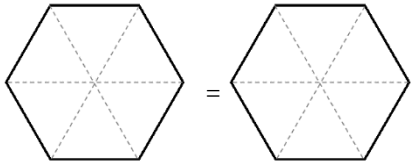
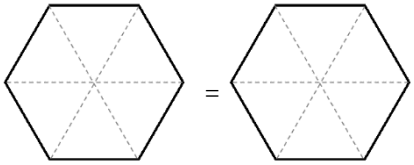
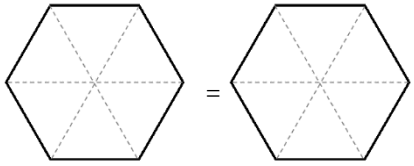
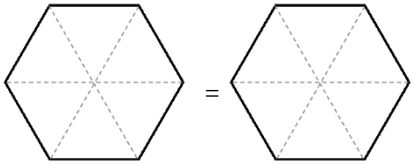
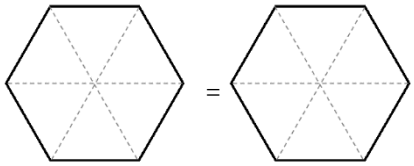
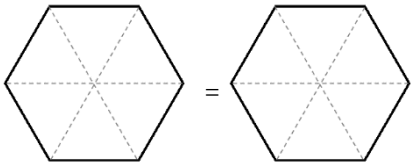
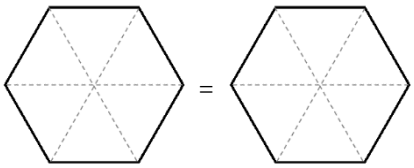
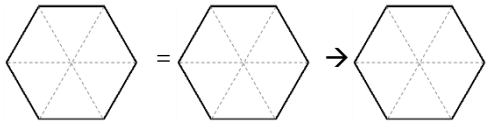


Unit 2 Lesson 1 – TV Lesson
One per student

Fraction Frenzy

Students work with teacher, peers, pattern blocks, and the Measurement Lab BLM to complete the activity. Color the diagrams and write the new equations with LIKE-denominators.

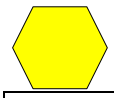
 = 1 whole

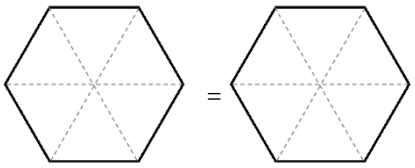
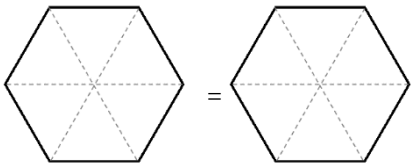
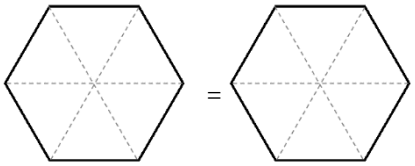
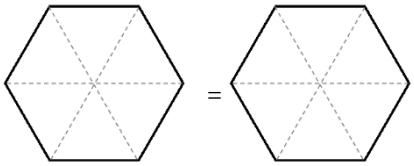
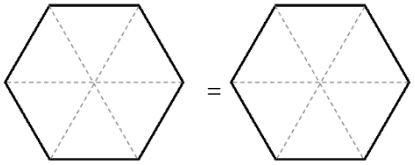
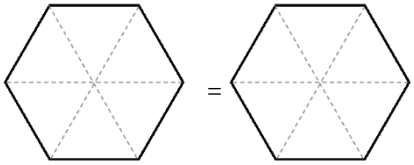
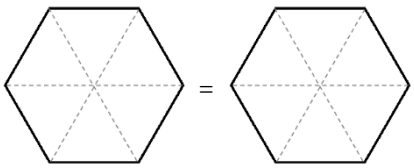
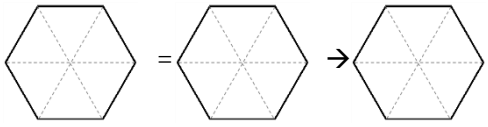
	UNLIKE Denominators	LIKE Denominators
Problem #1 **Pictorial Model**		
Equation →		
Problem #2 **Pictorial Model**		
Equation →		
Problem #3 **Pictorial Model**		
Equation →		
Problem #4 **Pictorial Model**		
Equation →		

Unit 2 Lesson 1 – TV Lesson
One per student

Frenesí de fracciones

Los estudiantes trabajarán con el maestro, sus compañeros, bloques patrón y el laboratorio de mediciones de BLM para completar la actividad. Colorea los diagramas y escribe las nuevas ecuaciones con denominadores IGUALES.

 = 1 entero

	Denominadores NO COMUNES	**Denominadores COMUNES**
Problema #1 **Modelo Pictórico**		
Ecuación →		
Problema #2 **Modelo Pictórico**		
Ecuación →		
Problema #3 **Modelo Pictórico**		
Ecuación →		
Problems #4 **Modelo Pictórico**		
Ecuación →		

Materials
- set of dominoes
- 1 coin
- scratch paper
- 12x12 multiplication chart

All items listed above per partner pair.
- **BLM** Fractional Fortitude Game Directions
- **BLM** Fractional Fortitude Record Sheet

Math Vocabulary
fraction
ratio
percent
tessellation
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
lithograph
predecessors
tapestries
mural
architecture
linoleum
perspective

Proficiency Standard) 3C, 3D, 3F, 3G, 4H, 5A, 5B, 5C

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.2., I.E.1., II.C.1.
ELA I.A.2., I.A.3., II.A.4., 5B,
MATH III.A.1., III.A.2.,II.C.2., III.B.1., VII.A.2.

Unit 2, Lesson 1 — Grades 5-6

Follow-up

Math Objectives:
- Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

If students did not finish the questions during the TV Lesson they may do so during this time.

Practice and Application
Before playing the game, practice manipulating fractions in an equation to create common denominators. Work these examples with students on the board.

Ex: *(only manipulating one fraction to create a common denominator)*

$$\frac{2}{3} + \frac{1}{6} = ???$$

Ex: *(manipulating both fractions)*

$$\frac{1}{4} + \frac{1}{5} = ???$$

Even though the numbers are easy in these examples, walk students through the process of finding a common multiple between *(3 and 6)* and *(4 and 5)* on the multiplication chart. While any common multiple will work, it is more efficient to find the Least Common Multiple. This diagram shows the Follow-up game example.

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Unit 2, Lesson 1 — Grades 5-6

Follow-up - continued

Group students in partner pairs to play the game Fractional Fortitude. Directions provided on the **BLM** Fractional Fortitude Game Directions. Players record their work and keep score in the chart on **BLM** Fractional Fortitude Record Sheet. Verification work is done on scratch paper only.

Extension variation: Pairs may use fractions larger than one *(improper fractions)*.

Extension variation: Players may choose three dominoes.

It is likely that a student may choose fraction pairs with like denominators throughout the entire game. Ensure that ALL students have experience with unlike denominators. Redraw a domino, challenge them with an improper fraction by flipping it over, etc.

Monitor student groups, stopping to ask thought provoking questions.

QUESTIONS

- What factor do the denominators have in common?
- How did you find the common factor on the multiplication chart?
- Did you have to change both fractions? Why or why not?
- Why do you have to find common denominators when add and subtracting fractions?
- Why did you choose to make that fraction improper?

Recursive Review

Please use **BLM** *to answer the Recursive Review questions.*

- Tremaine cut a piece of lumber down to the size he needed, which was $8\frac{1}{4}$ ft. If the scrap lumber was 1.75 ft. long, how long was the wood before he cut it?

Writing Topics

Independent Writing Topic

Students will have a daily writing activity which will incorporate the day's focus math vocabulary.

- **Explain how finding percents mentally can help you in your daily life.**

Objectives

Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 2 Lesson 1 – Follow-up
One per group

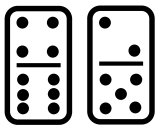
Fractional Fortitude Game Directions

Materials:

- set of dominoes
- 1 coin (with heads and tails)
- 12x12 multiplication chart
- **BLM** Fractional Fortitude Record Sheet

Procedure:
The object of the game is to add and subtract fractions with like and unlike denominators to earn points and have the highest score when class ends.

- Lay dominoes face down in a single layer between players.
- Player 1 chooses two dominoes at random and arranges them to show a fraction less than one, unless otherwise specified by the teacher.
- Player 1 flips the coin. Heads = addition Tails = subtraction
- Player 1 performs his/her calculations by first finding a common denominator. A multiplication chart is available to aid in finding a common multiple between denominators. Player 2 must use the common multiple Player 1 chooses and calculates on scratch paper to verify answer.
  Correct: Common denominator represents the number of points earned.
  Incorrect: Player receives one point (for effort).
- Player can choose to change an improper answer to a mixed fraction to double their points earned.
- Play moves to Player 2. Repeat process.
- Highest score when class ends is the winner!

Ex:
Player 1 chooses dominoes 4:6 and 2:5. 

Player 1 flips coin. Heads = addition 

Player 1 uses the multiplication chart to find a common multiple of 30.

Both players add the new fractions. $\frac{20}{30} + \frac{12}{30}$.

Player 1 correctly answers $\frac{32}{30}$ to earn 30 points.

Then simplifies to $1\frac{2}{30}$ for double the points and receives 60!

Roles reverse and play continues with Player 2.

Literature Vocabulary
Unidad 2 Lección 1 –
1 por grupo

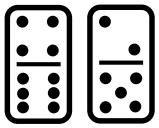
Instrucciones del juego de Fortaleza con Fracciones

Materiales:

- juego de dominós
- 1 moneda (con cara y cruz)
- tabla de multiplicar de 12x12
- Hoja de registro de Fortaleza con Fracciones de **BLM**

Procedimiento:
El objetivo del juego es sumar y restar fracciones con denominadores iguales y diferentes para ganar puntos y tener la puntuación más alta cuando termine la clase.

- Coloca los dominós boca abajo en una sola capa entre los jugadores.
- El jugador 1 elige 2 dominós al azar y los acomoda para que muestren una fracción menor a 1, a menos que el maestro especifique lo contrario.
- El jugador 1 lanza la moneda. Cara = suma Cruz = resta
- El jugador 1 realiza sus cálculos encontrando primero un común denominador. Hay una tabla de multiplicar disponible para ayudar a encontrar un múltiplo común entre los denominadores. El jugador 2 debe usar el múltiplo común que elija el jugador 1 y calcula en papel borrador para verificar la respuesta.
  Correcto: El común denominador representa el número de puntos ganados.
  Incorrecto: El jugador recibe 1 punto (por su esfuerzo).
- El jugador puede decidir cambiar una respuesta impropia por una fracción mixta para duplicar los puntos que gana.
- El turno pasa al jugador 2. Repite el proceso.
- ¡Quien tenga más puntos al final de la clase es el ganador!

Ejemplo:
El jugador 1 elige los dominós 4:6 y 2:5. 

El jugador 1 lanza la moneda. Cara = suma 

El jugador 1 usa la tabla de multiplicar para encontrar un múltiplo común de 30.

Ambos jugadores suman las nuevas fracciones. $\frac{20}{30} + \frac{12}{30}$.

El jugador 1 responde correctamente $\frac{32}{30}$ para ganar 30 puntos.

Luego simplifica a $1\frac{2}{30}$ para duplicar sus puntos, ¡y recibe 60!

Los papeles se invierten y el juego continúa con el jugador 2.

Unit 2 Lessons 1 – Follow-up
One per partner pair

Fractional Fortitude Record Sheet

Record work on this handout while playing the game.

	Player 1 work			Player 2 work		
	Unlike/No común	**Like/Común**	**points**	**Unlike/No común**	**Like/Común**	**points**
Turn 1						
Turn 2						
Turn 3						
Turn 4						
Turn 5						
Turn 6						
Turn 7						
Turn 8						
Turn 9						
Turn 10						
Total Points						

Unit 2 Lessons 1 – Follow-up
One per student

Multiplication Chart

The common multiple used for the example game situation on BLM Fractional Fortitude Game Directions is highlighted on this chart. You may find multiples either vertically or horizontally.

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Unit 2 Lessons 1-3 – Follow-up
One per student

Recursive Review Problems

Solve the recursive review problems using any strategy of your choice.

Unit 2 Lesson 1

Tremaine cut a piece of lumber down to the size he needed, which was $8\frac{1}{4}$ ft. If the scrap lumber was 1.75 ft. long, how long was the wood before he cut it?

Unit 2 Lesson 2

$$\frac{5}{7} - \frac{2}{14} = ???$$

Unit 2 Lesson 3

Tank makes 7 free throws out of 11 tries; at this rate how many shots did he take if he made 21?

Unidad 2 Lecciones 1-3 – Seguimiento
1 por estudiante

Problemas de repaso recursivo

Resuelve los problemas de repaso recursivo usando cualquier estrategia que elijas.

Unidad 2 Lección 1

Tremaine cortó una pieza de madera al tamaño que necesitaba, que era de $8\frac{1}{4}$ ft. Si la madera sobrante medía 1.75 ft de largo, ¿qué longitud tenía la madera antes de cortarla?

Unidad 2 Lección 2

$$\frac{5}{7} - \frac{\mathbf{2}}{\mathbf{14}} = \mathbf{???}$$

Unidad 2 Lección 3

Tank encesta 7 tiros libres de 11 intentos, con esta proporción, ¿cuántos tiros tuvo que hacer si encestó 21?

Materials
- 1 cup guacamole or other dip
- 6 carrots (small)
- 2 half-cup measuring cups
- 2 plastic spoons
- 2 paper dessert plates
- 2 paper towels

All items listed above per partner pair
- **BLM** Dip 'n Veggies-Snack Fractions
- **BLM** Dip 'n Veggies-Snack Fractions Teacher Guide

Math Vocabulary
fraction
ratio
percent
tessellation
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
lithograph
predecessors
tapestries
mural
architecture
linoleum
perspective

Unit 2, Lesson 1 — Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents.
- Convert between fractions, decimals, and percents.
- Estimate to find solutions to problems involving fractions, decimals, and percents.

Language Objectives
- Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.

Snack Fractions
As part of each math day, please include a quick "Snack Fraction" activity. If your district/school does not allow any snacks to be given to students, please alter the activity by providing a paper shape to be divided into fractional parts.

Tell students that each day you will have them share snacks with partners or small groups.

Today, students will divide the two different food items in their snack. A Teacher Guide for the BLM is provided.

QUESTIONS
- What is the whole in this situation?
- How do I break this up into equal shares?
- What does that fraction represent?
- Does this fraction have an easily calculated decimal equivalent?
- How can you find the decimal of this fraction?

Once the activity is complete, let them enjoy their snack!

Snack Fraction Journal Writing: BLM Dip 'n Veggies-Snack Fractions

Explain why $\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \frac{4}{5}$.

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 2 Lesson 1 – Snack Fractions
One per student

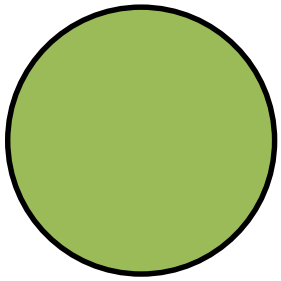
Dip 'n Veggies – Snack Fractions

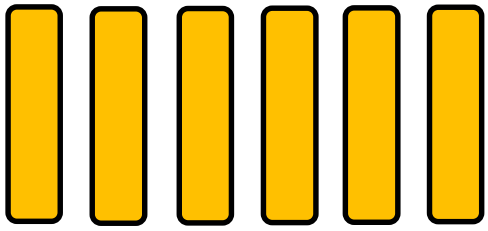
Divide the snack equally between the two of you. Work with your partner to solve the problems.

1. What fraction represents your portion of dip out of the whole?
   word _____
   fraction _____
   decimal _____

2. What fraction represents your portion of carrots out of the whole?
   word _____
   fraction _____
   decimal _____

3. Shade the diagram to represent your portion when shared between you and your partner.

   Dip: 

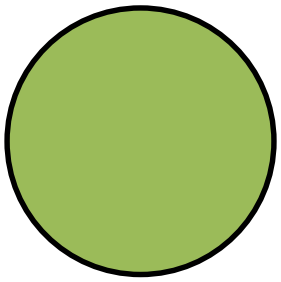
   Carrots: 

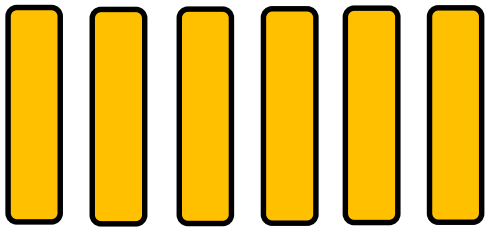
Now pretend there are six of you sharing the whole snack.

4. What fraction represents your portion of dip out of the whole?
   word _____
   fraction _____
   decimal _____

5. What fraction represents your portion of carrots out of the whole?
   word _____
   fraction _____
   decimal _____

6. Shade the diagram to represent your portion when shared between six people.

   Dip: 

   Carrots: 

Unidad 2 Lección 1 – Fracciones de refrigerios
1 por estudiante

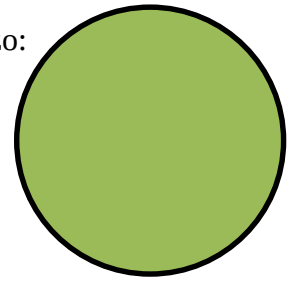
Vegetales con aderezo – Fracciones de refrigerios

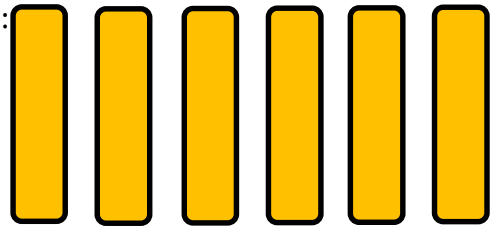
Divide el refrigerio de manera equitativa entre los dos. Colabora con tu compañero para resolver los problemas.

1. ¿Qué fracción representa tu porción de aderezo del entero?
   palabras _____
   fracción _____
   decimal _____

2. ¿Qué fracción representa tu porción de zanahorias del entero?
   palabras _____
   fracción _____
   decimal _____

3. Sombrea el diagrama para representar tu porción al compartirla entre ti y tu compañero.

Aderezo: 

Zanahorias: 

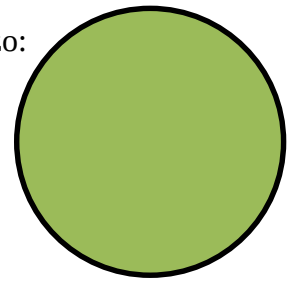
Ahora imagina que son 6 de ustedes los que comparten el refrigerio.

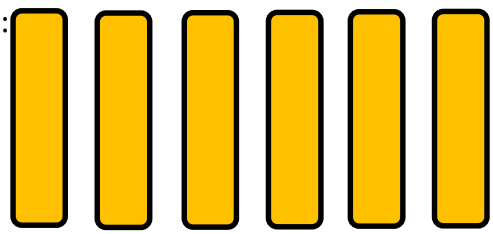
Ahora imagina que son 6 de ustedes los que comparten el refrigerio.

7. ¿Qué fracción representa tu porción de aderezo del entero?
   palabras _____
   fracción _____
   decimal _____

8. ¿Qué fracción representa tu porción de zanahorias del entero?
   palabras _____
   fracción _____
   decimal _____

9. Sombrea el diagrama para representar tu porción al compartirla entre ti y tu compañero.

Aderezo: 

Zanahorias: 

Unit 2 Lesson 1 – Snack Fractions
Teacher copy

Dip 'n Veggies – Snack Fractions Teacher Guide

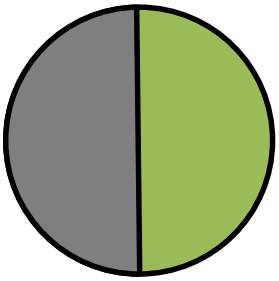
Divide the snack equally between the two of you. Work with your partner to solve the problems.

1. What fraction represents your portion of dip out of the whole?
   word one-half
   fraction 1/2
   decimal 0.5

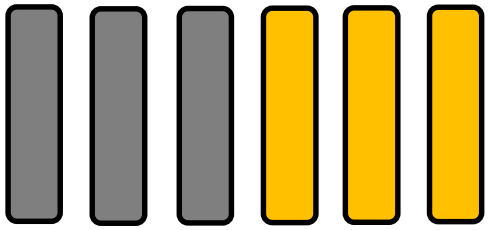
2. What fraction represents your portion of carrots out of the whole?
   word three-sixths
   fraction 3/6
   decimal 0.5

3. Shade the diagram to represent your portion when shared between you and your partner.

Dip:



Carrots:



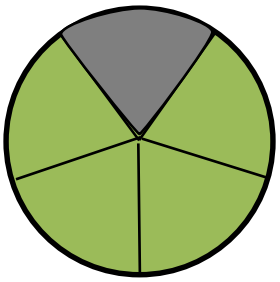
Now pretend there are five of you sharing the whole snack.

4. What fraction represents your portion of dip out of the whole? *these are benchmarks
   word one-fifth
   fraction 1/5
   decimal 0.2

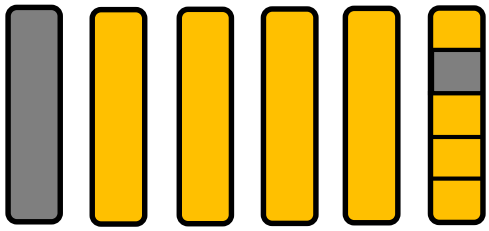
5. What fraction represents your portion of carrots out of the whole?
   word one and one-fifth
   fraction $1\frac{1}{5}$
   decimal 1.2

6. Shade the diagram to represent your portion when shared between five people.

Dip:



Carrots:



Unit 2 Lesson 1 – Family Fun

Dear _____,

We learned about an artist named M.C. Escher in class today.

His 1942 Lithograph, *Verbum,* is mathematical because…

_____

_____

_____

The math concepts we explored in our lesson because of this picture were…

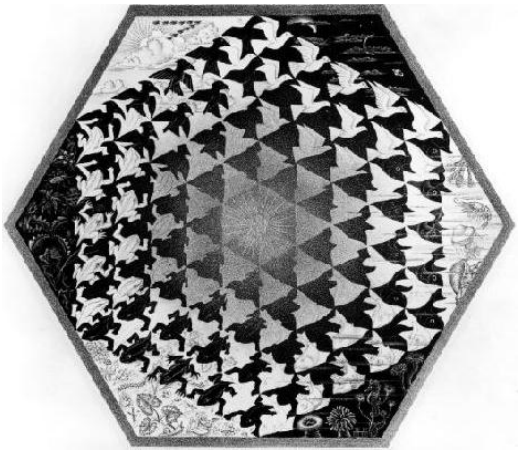
_____

_____

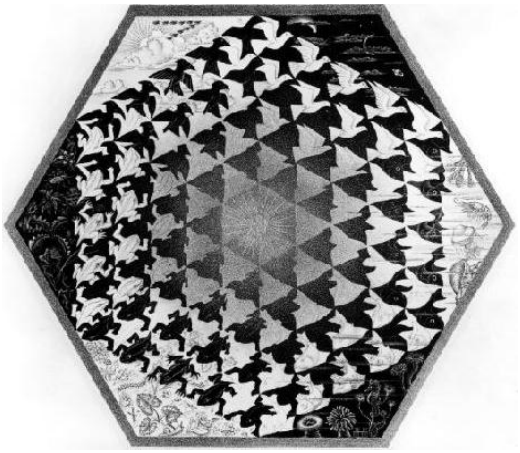
_____

Sincerely,

_____



Unidad 2, Lección 1 – Diversión familiar 5



Querido _____,

Hoy aprendimos en clase sobre un artista llamado MC Escher.

Su litografía de 1942 *Verbum* es matemática porque...

_____
_____
_____

Los conceptos matemáticos que exploramos en nuestra lección gracias a esa imagen fueron...

_____
_____

Atentamente,

_____

Materials
- **BLM** Pattern Block Pizazz (2 of 3) Measurement Lab Record Sheet
- **BLM** Pattern Block Pizazz (2 of 3) Teach Guide
- **BLM** Hexagonal Tessellations #1
- **BLM** Solve It! Problem 3
- **BLM** Fraction Action and *X* Marks the Spot
- **BLM** Lessons 1-3 CGI Biography and Artwork of M.C. Escher http://www.mcescher.com/

Math Objectives
- Solve problems using a measurement tool and calculating measurements.
- Model and solve multistep word problems.
- Solve problems involving fractions, ratios, and proportions.
- Solve for a variable.
- Compose and decompose numbers.

Language Objectives
- Speak to partners, teacher, and class using vocabulary.
- Discuss problem solving process and strategies.

Math Vocabulary
fraction
ratio
percent
tessellation
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
lithograph
predecessors
tapestries
mural
architecture
linoleum
perspective

Assessed TEKS for this Unit
- 5th – 5.3H*, 5.3K*
- 6th – 6.3A, 6.5B*, 6.3B, 6.3C

**denotes Revised 2014 TEKS*

Unit 2, Lesson 2 — Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post-assessment. They are not optional.

ESSENTIAL

Measurement Lab
- Lesson 1 – *Pattern Block Pizazz (1 of 3)* (5th assessment items 1,2,3)
- **Lesson 2 – Pattern Block Pizazz (2 of 3) (6th assessment item 5)**
- Lesson 3 – Pattern Block Pizazz (3 of 3) (6th assessment item 5)

Lesson 2 Materials
Printing the **BLM** Hexagonal Tessellations #1 on cardstock is essential for this activity. The sturdy paper will hold up to the cutting, taping, and gluing that will happen later in today's lesson.
- black, blue, and green markers

Lesson 2 Student Pairs
Be explicit with students that today's activity is an exploration into ratios *(part to part comparison)*. Students will be asked to generate a triangular composition ratio between two shapes. This is asking them to quantify how many triangles it takes to make each shape noted.
EX: It takes one triangle to make a triangle, and two triangles to make a rhombus. Therefore, the triangular composition ratio for a triangle to rhombus comparison would be… one to two, 1:2, or $\frac{1}{2}$ keeping the labels consistent. Meaning, a rhombus to triangle comparison would be… 2:1. It is important students understand there are three ways to write a ratio and they must keep the labels consistent.
1) color hexagons as per instructions on BLM Hexagonal Tessellations #1
2) students answer questions using the colored hexagons

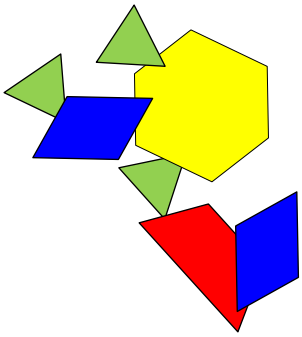
Solve It! Multi-step problem solving
- Lesson 1 – *pairs, 2-step* (6th assessment item 7)
- **Lesson 2 – pairs, 2-step (6th assessment item 4)**
- Lesson 3 – independent, 2-step (6th assessment item 8)

Fraction Action
- Lesson 1 – *(5th assessment item 6)*
- **Lesson 2 – (5th assessment item 6)**
- Lesson 3 – (5th assessment item 6)

***X* Marks the Spot**
- Lesson 1 – (5th assessment item 6)
- **Lesson 2 – (6th assessment item 2,4,7,8)**
- Lesson 3 – (6th assessment item 2,4,7,8)

ELPS (*English Language Proficiency Standard*) 1G, 2F, 2G, 3C, 3E, 3F, 4I **CCRS** *(College and Career Readiness Standards)* CROSS-CURRICULAR I.A.1., I.C.2., I.C.3., II.D.1 ELA II.A.2., II.A.4., II.B.2. MATH I.A.2., I.C.1., II.A.1., II.B.1., IV.B.1., VII.A.1., VIII.A.2., VIII.B.2.	**Unit 2, Lesson 2** **Grades 5-6** **Daily Routine** - continued **----------** **CGI** • Lesson 1 – Lesson 1 - Part-Part-Whole, Part Unknown (5th grade Assessment Item 4) • **Lesson 2 – Rate, Partitive Division (6th grade Assessment Item 6)** • Lesson 3 – Compare, Referent Unknown (5th grade Assessment Item 5) **----------** **The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.** **----------** **OPTIONAL** **Target Number** • Lesson 1 – *omit* • **Lesson 2 – Target Number 12** • Lesson 3 – Target Number 24 **Money Matters** (*If you have a full program and wish to use this optional activity, you will find BLMs and Explanations on MAS Space*.)

Unit 2 Lesson 2 – Daily Routines – Measurement Lab
One per student



Pattern Block Pizazz (2 of 3) – Measurement Lab Record Sheet

Materials:

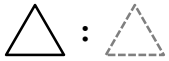
- black, blue, and green markers

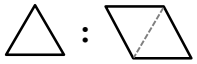
Task:

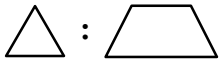
- Color the hexagons on BLM Hexagonal Tessellations #1 using the markers.
- Work with your partner or group to generate the following ratios.

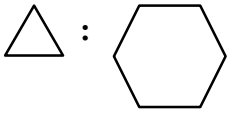
**The pictorial representations for numbers1-2 have been done for you. Please complete the following pictorial models in the same fashion. (showing triangular composition)*

unit of measure = 

1. How many triangles does it take to make one triangle?
   The triangular composition ratio for a triangle to triangle comparison would be…
   word _____ picture
   colon _____ 
   fraction _____

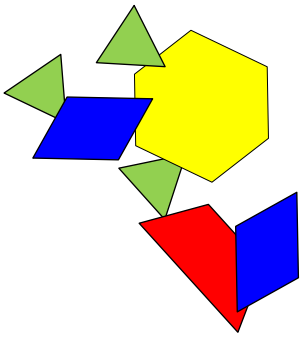
2. How many triangles does it take to make one rhombus?
   The triangular composition ratio for a triangle to rhombus comparison would be…
   word _____ picture
   colon _____ 
   fraction _____

3. How many triangles does it take to make one trapezoid?
   The triangular composition ratio for a triangle to trapezoid comparison would be…
   word _____ picture
   colon _____ 
   fraction _____

4. How many triangles does it take to make one hexagon?
   The triangular composition ratio for a triangle to hexagon comparison would be…
   word _____ picture
   colon _____ 
   fraction _____

You will need this sheet during the TV Lesson

Unit 2 Lesson 2 – Daily Routines – Measurement Lab
One per student



Pattern Block Pizazz (2 of 3) – Measurement Lab Record Sheet

Materiales:

- marcadores negro, rojo, azul y verde

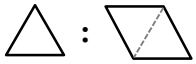
Task:

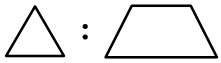
- Colorea los hexágonos del BLM Hexagonal Tessellations #1 usando los marcadoes.
- Trabaja con tu compañero o tu grupo para crear las razones siguientes.

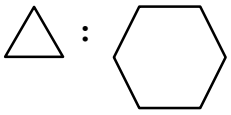
**Las representaciones pictóricas para los números 1-2 ya están hechas. Favor de completar los modelos pictóricos de la misma manera (mostrando composición triangular).*

Unidad de medida = 

1. ¿Cuántos triángulos se necesitan para formar 1 triángulo?
   La razón para la composición triangular para una comparación de triángulo a triángulo sería:
   palabra _____ dibujo
   colon _____ 
   fracción _____

2. ¿Cuántos triángulos se necesitan para formar 1 rombo?
   La razón para la composición triangular para una comparación de triángulo a rombo sería:
   palabra _____ dibujo
   colon _____ 
   fracción _____

3. ¿Cuántos triángulos se necesitan para formar 1 trapezoide?
   La razón para la composición triangular para una comparación de trapezoide a rombo sería:
   palabra _____ dibujo
   colon _____ 
   fracción _____

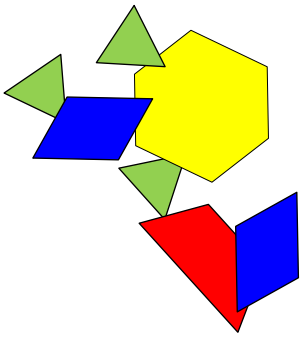
4. ¿Cuántos triángulos se necesitan para formar 1 hexágono?
   La razón para la composición triangular para una comparación de trapezoide a hexágono sería:
   palabra _____ dibujo
   colon _____ 
   fracción _____

You will need this sheet during the TV Lesson

Necesitarás esta hoja durante la Lección TV.

Unit 2 Lesson 2 – Daily Routines – Measurement Lab
One per student

Pattern Block Pizazz (2 of 3) – Teacher Guide



Materials:

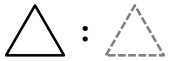
- black, blue, and green markers

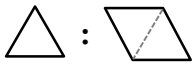
Task:

- Color the hexagons on BLM Hexagonal Tessellations #1 using the markers.
- Work with your partner or group to generate the following ratios.

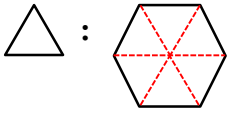
**The pictorial representations for numbers1-2 have been done for you. Please complete the following pictorial models in the same fashion. (showing triangular composition)*

unit of measure = 

1. How many triangles does it take to make one triangle?
   The triangular composition ratio for a triangle to triangle comparison would be…
   word one to one picture
   colon 1:1
   fraction $\frac{1}{1}$
   

2. How many triangles does it take to make one rhombus?
   The triangular composition ratio for a triangle to rhombus comparison would be…
   word one to two picture
   colon 1:2
   fraction $\frac{1}{2}$
   

3. How many triangles does it take to make one trapezoid?
   The triangular composition ratio for a triangle to trapezoid comparison would be…
   word one to three picture
   colon 1:3
   fraction $\frac{1}{3}$
   

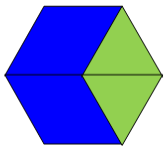
4. How many triangles does it take to make one hexagon?
   The triangular composition ratio for a triangle to hexagon comparison would be…
   word one to six picture
   colon 1:6
   fraction $\frac{1}{6}$
   

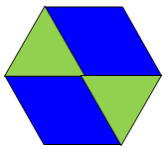
There are more comparisons. These are sufficient as an introduction for subsequent activities in the unit.

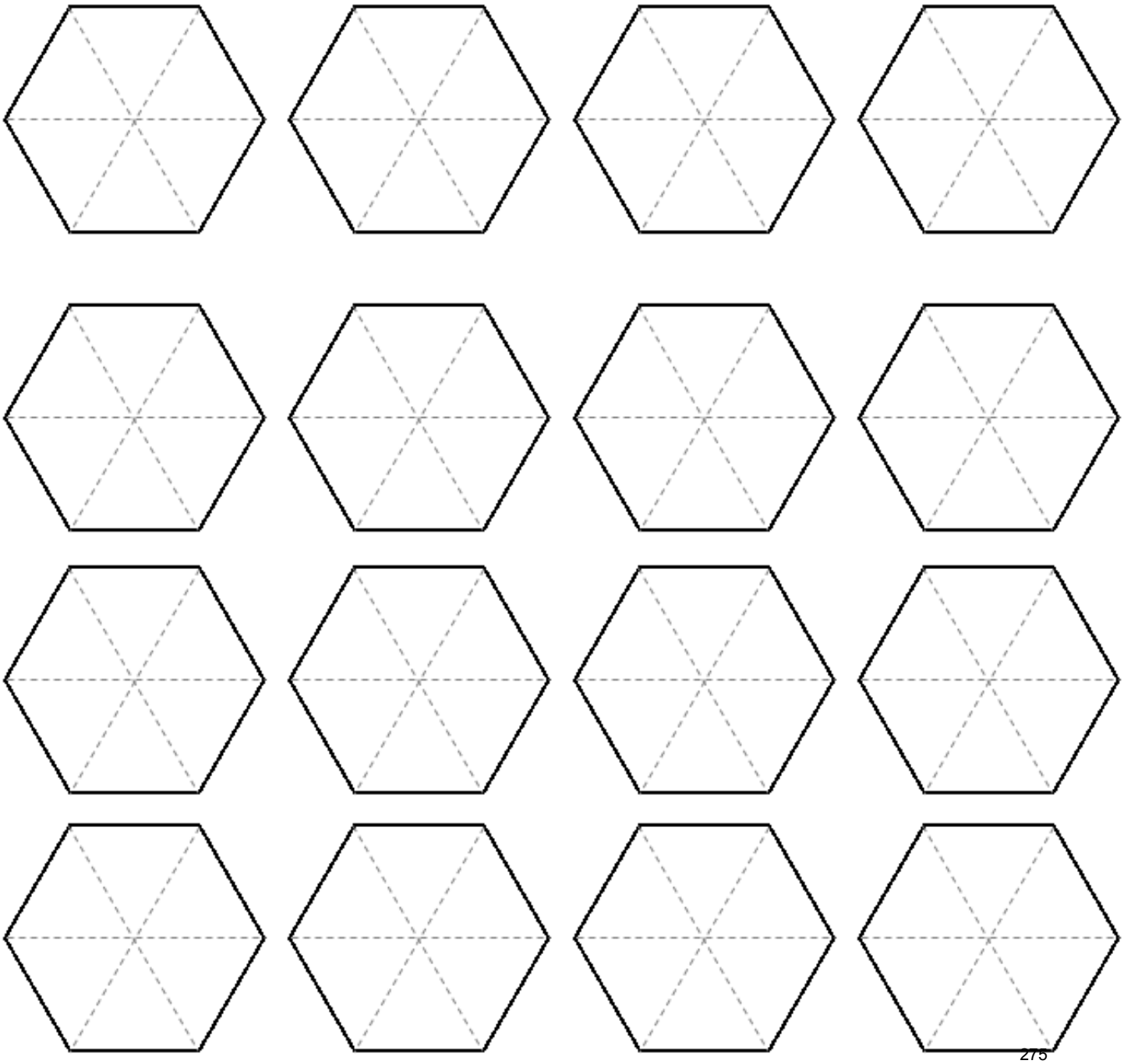
Unit 2 Lesson 2 – Daily Routines – Measurement Lab
One per student

Hexagonal Tessellations #1

Choose **ONE** style either "A" or "B." **ALL** hexagons must be colored with the **SAME** style.
Do **NOT** mix styles. Show a black line of separation between triangles and rhombi.

Style A: 

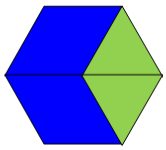
Style B: 

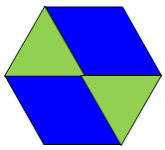


Unit 2 Lesson 2 – Daily Routines – Measurement Lab
One per student

Mosaicos de hexágonos #1

Lije **UN** estilo, ya sea "A" o "B". **TODOS** los hexágonos deben ser coloreados con el **MISMO** estilo.
NO mezcles los estilos. Muestra una raya negra de separación entre triángulos y rombos.

Estilo A: 

Estilo B: 

Unit 2 Lesson 2 – Daily Routines – Solve It! (pairs) **5-6**
1 per partner pair

Problem 3:
Angela found a different credit card company that offers a much smaller credit limit, but only charges 10% for interest. Use a bar model to figure out how much her bill would be at the end of the month if she bought $100 worth of gas at a 10% interest rate. **Hint – How many 10's make 100%? Divide your bar into that many pieces. Label your benchmark values first! Think in tens.*

Step 1 – Name:	Verification – Name:
Step 2 – Name:	Verification – Name:
Final Solution – Name:	Verification – Name:

Unit 2 Lesson 2 – Daily Routines – Solve It! (pairs) **5-6**
1 per partner pair

Problem 3:
Ángela encontró otra compaíia de tarjeta de crédito que le ofreció un límite de crédito mucho mas bajo pero solamente cobra una tasa de interes de 10%. Usa un modelo de barra para calcular cuánto sería su cuenta al final del mes si compró $100 de gasolina a una tasa de interes de 10%. *Pista - ¿cuántos 10s forman el 100%? Divide tu barra en esa cantidad de piezas. ¡Etiqueta primero los valores de tus puntos de referencia! Piensa en 10s.*

Paso 1 – Nombre:	Verificación – Nombre:
Paso 2 – Name:	Verificación – Nombre:
Solución final – Nombre:	Verificación – Nombre:

Unit 2 Lesson 2 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

Materials:
None for this activity

Task:
Patti measured the three sides of the hexagon in the picture to figure out how much lace she would need to attach around all six sides. Using the measurements labeled in the picture, how much ribbon will Patti need to buy?

5.3 cm

$6\frac{4}{10}$ cm

1.6 cm

X Marks the Spot

Solve for *x*.

30%	**of *x***	**= 60**
40%	**of *x***	**= 80**
80%	**of *x***	**= 160**

Unit 2 Lesson 2 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

Materiales:
ninguno para esta actividad

Tarea:
Patti midió los 3 lados del hexágono en el dibujo para determinar cuánto encaje necesitaría para pegarlo alrededor de los seis lados. Usando las medidas escritas en el dibujo, ¿cuánto encaje tendrá que comprar Patti?

5.3 cm

$6\frac{4}{10}$ cm

1.6 cm

X Marca el sitio

Resuelve para *x*.

30%	**de *x***	**= 60**
40%	**de *x***	**= 80**
80%	**de *x***	**= 160**

Materials
- **BLM** Semantic Map
- **BLM** Percent of Interest and Tips

Literature Selection
Biography and Artwork of M.C. Escher
http://www.mcescher.com/

Math Vocabulary
fraction
ratio
percent
tessellation
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
lithograph
predecessors
tapestries
mural
architecture
linoleum
perspective

ELPS (*English Language Proficiency Standard*) 1G, 2F, 2G, 3C, 3E, 3F, 4I, 5B, 5C, 5F

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR II.A.2., II.A.3., II.A.5., II.B.2.
ELA I.A.1., I.A.2., II.A.3., II.A.6., II.A.8., II.A.9, III.B.2.

Technology Option
https://www.mcescher.com
https://www.wordsmyth.net

Unit 2, Lesson 2 — Grades 5-6

Classroom Lesson

Every day teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

Math Objectives:
- Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models.
- Represent ratios and percents with concrete models, fractions, and decimals.

Reading Objectives:
- Use resources such as Internet, dictionary, thesaurus, and peers to determine or clarify the meaning of unfamiliar words.
- Complete semantic mapping for unfamiliar words to broaden comprehension of word meaning, origins, and part of speech.
- Comprehend new vocabulary and use it when reading and writing

Language Objectives:
- Listen to questions, generate answers in writing, and orally respond to class members.

Building Background – Vocabulary & Literature

Graphic organizers can help students visually organize and remember new information. Throughout today's lesson you will be guiding students through completing a semantic map for each of the literature vocabulary words. During the Practice and Application, students will pair read the biography and insert synonyms that will make sense. Present the list of seven vocabulary words generated in lesson 1.

Ask, **"**What is the most interesting fact you learned yesterday about M.C. Escher? What is your favorite piece of artwork by him?"

Say, "Today we are going to explore the vocabulary words. We will be using various resources such as our peers, the Internet, the dictionary, and thesaurus. Before we begin let's review parts of speech.

Ask, "What is a noun?" Allow for response. A noun names a person, place, thing, or event. What is the noun in this sentence?
M.C. Escher traveled to many countries. (M.C. Escher)

Unit 2, Lesson 2 — Grades 5-6

Classroom Lesson - continued

Ask, "What is a verb?" Allow for response. A verb is a word that shows action. It is what the subject or noun does. Think about the same sentence, *M.C. Escher traveled to many countries*. What is the verb? - What did he do? *(traveled)*

Ask, "What is an adjective?" Allow for response. An adjective is a word or phrase which describes the subject or noun. Listen to this sentence…*M.C. Escher is a famous artist*. Famous artist describes M.C. Escher, so it is the adjective in this sentence.

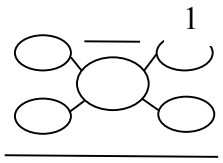
Ask, "What is an adverb?" Allow for responses.

Say, "This one is confusing for some adults…an adverb most commonly describes a verb. Think about this sentence: *M.C. Escher carefully designed tapestries inspired from his trips to Italy*. The sentence is about M.C. Escher. What did he do? Designed tapestries, that's the verb. How did he design the tapestries? He designed them carefully.
Here are the parts of speech we will be hearing today: Noun, Verb, Adjective, and Adverb.
Write the parts of speech on the board."

Identifying Part of Speech:

- Who or what is the sentence talking about? NOUN
- What is the person or thing doing in the sentence? What is the action? VERB
- How are they doing this action? (usually the word in front of verb) ADVERB
- What words are describing the person, place, thing or event? ADJECTIVE

Sample Semantic Map:



Distribute semantic maps to students. Students should have one map per word. The activity will be done as a class.

Comprehensible Input: Vocabulary & Literature
Say, "Let's reread M.C. Escher's Biography together and locate the vocabulary words we noted in lesson 1."
Reread the story together, allowing students to popcorn in reading or to read simultaneously with you *(appropriate to language proficiency)*.

After reading the first vocabulary word in the text, STOP. Write the vocabulary word where the number **1** is indicated on the sample semantic map to the left. Reread ONLY the sentence containing the vocabulary word. Guide the students in identifying the part of speech of the vocabulary word through questioning and write the correct part of speech to the right of the vocabulary word on line 1.
Questions to the left are a guide, adjust as necessary.

lithograph = noun *(thing)*; we will change to lithography to understand meaning of lithograph.
predecessors = noun *(person)*
tapestries = noun *(thing)*
mural = noun *(thing)*
architecture = noun *(thing)*
linoleum = noun *(thing)*
perspective = noun *(thing)*

Unit 2, Lesson 2 — Grades 5-6

Classroom Lesson - continued

Continue reading and pausing to write the vocabulary word and part of speech in each semantic map.
Distribute dictionaries, thesauruses, or allow students to utilize online children's dictionary. Read the dictionary *(online and/or book version)* definition of the first word aloud.

Say, "I want to put this definition in my own words, so it makes sense to me. Let me reread the definition and then turn to your partner. Tell them in a short phrase or short sentence the definition in your own words."

Allow students to share their definitions with the entire group. Guide them in selecting the appropriate grade level terms that best define the word as it pertains to the text. Definitions in the students' terms are written on the semantic map *(2)*.

<u>These definitions are a guide</u>:
lithograph - made by lithography *
predecessors - has a job before another
tapestries - (tapestry) fabric with colored threads woven to make a picture
mural - large picture painted on a wall or ceiling
architecture - design of buildings
linoleum - floor covering material (made of pressing linseed oil and ground up wood products onto a canvas backing)
perspective - view, outlook on something or subject

*****Say, "I think this first definition *(lithograph)* is confusing because it uses almost the same word in the definition. Hmmm… I should look up this version of the word *(point to lithography)* to understand the meaning more."

Read the definition for lithography, and then write lithography beneath the word lithograph on the semantic map. Explain that sometimes words you need to define require more research to better understand their meaning.

We will explore the word lithography with the remainder of the semantic map because it helps us better understand the productions of M.C. Escher as an artist.

Write the definition for lithography on the semantic map:

Lithography *(noun)* - the process of printing from a flat surface treated to absorb ink only in specific areas.

Unit 2, Lesson 2 — Grades 5-6

Classroom Lesson - continued

After students have written their definition for the first word, say, **"**English is a fascinating language that has a rich history. The three origin languages most influential to English are Anglo-Saxon, Latin, and Greek. For each of the vocabulary words I will share with you the origin of the words and word parts, because many words in English are defined by their origins. Let's look at *lithography* first. The first part of this word comes from 'lithos' meaning stone and the second part of the word comes from 'graph' meaning to write. We can assimilate a definition knowing the meaningful parts of the word…lithography could be defined as 'stone writing' or 'to write on stone'. This word comes to English from Greek origins because words with ph for /f/ such as in graph." Write the *Greek= lithos, graph* in the center circle after the definition.

Continue writing all definitions with the students' own wording on the appropriate semantic maps in the center oval. After each word, briefly discuss the origin and morphemes of the words. Use the list below as a guide. Students do not need to write the entire origin of the word.

Word Origins

- **predecessors**: Latin = pre (before), decessor (retiring officer) Latin words contain r-controlled vowels and affixes such as –or.
- **tapestries** (tapestry): French = tapestry (carpeting) Approximately 29% of English words come from French origins. Most of these will be the names of items or animals.
- **mural**: Latin = murus (wall) This word has a similar attribute from Latin words that the word predecessors has…r-controlled vowel.
- **architecture**: Latin= architectura (chief builder) This word has a long history from the 16th century. It came to the English language from Greek origins but passed to modern English via Latin. Again this word contains r-controlled vowel
- **linoleum**: Latin= linum (flax), oleum (oil) these two products are utilized in making linoleum. This 19th century word contains a schwa sound within the first syllable.
- **perspective**: Latin= per (through), specere (to look) This word comes originally from a Latin history science of optics. It also contains a schwa sound in the initial syllable.

Say, "Let's brainstorm as a class some other words that mean the same and words that mean the opposite as our vocabulary words. What do we call words that mean the same as another word?" Allow for responses. "I have a trick for remembering this word. It begins with an 's,' just like the word 'same.' Words that mean the same as another word are 'synonyms.' What is an example of a synonym?" Allow for responses.

Unit 2, Lesson 2 — Grades 5-6

Classroom Lesson - continued

"What do we call words that mean the opposite of another word?" Allow for responses. "Antonyms are words that mean the opposite of another word. What is an example of an antonym?" Allow for responses.

"We are going to write one or two synonyms in the top left circle on your page. Then, we will write one or two antonyms in the top right circle on our semantic map. We will use the thesaurus and possibly the dictionary to determine these synonyms and antonyms. The synonyms and antonyms need to be the same part of speech as the original vocabulary word. For example, if the vocabulary word is a noun, then the synonyms and antonyms would also need to be nouns."

Allow this list to be a guide:

- **lithography:** copy, replicate/original, create
- **predecessors:** forerunner, first/successor, second
- **tapestries:** curtains, drapes/photo, picture
- **mural:** painting, picture/statue
- **architecture:** plan/deconstruct, disorganize
- **linoleum:** floor/ceiling
- **perspective:** point of view, outlook/sound

Say, **"**Great job! The bottom two circles are for the opposite part of speech for what the vocabulary word is. If the vocabulary word is an adjective, this part will list nouns that could be described by the adjective. If the vocabulary word is a noun, this part will list adjectives that could describe the noun. If the vocabulary word is a verb, this part will list adverbs that would describe the verb."

Write on the board:

noun → adjective
adjective → noun
verb → adverb
adverb → verb

Say, "We will do this part as a class. We will discover some opposite parts of speech also by using the dictionary and revisiting the story."

Guide students through each word using the list below as a guide. Utilize pictures from the text or dictionary to add visual stimulus for word generation. Revisit as necessary the meanings of each part of speech.

- **lithography:** slowly, carefully *(adverbs)*
- **predecessors:** talented, intelligent *(adjectives)*
- **tapestries:** colorful, detailed *(adjectives)*
- **mural:** colorful, large *(adjectives)*
- **architecture:** Moorish, Italian, English *(adjectives)*
- **linoleum:** smooth, hard *(adjectives)*
- **perspective:** brilliant, tainted, swayed *(adjective)*

Practice and Application – Vocabulary & Literature

Say, **"**We have learned a lot today about our vocabulary words and their use in the biography about M.C. Escher. Now it's time to put our knowledge into practice.

Turn to your partner *(shoulder partner or prearranged partner dependent upon students' language proficiencies)*. Together you will locate a sentence in the biography that contains a vocabulary word. You will rewrite the sentence on the back of your semantic map, as it is in the text. Together you will change the vocabulary word to a synonym and add in one word that is the opposite part of speech.
Let's do the first vocabulary word together. First, locate 'lithograph' in the biography about M.C. Escher. Raise your hand when you have it located."

copy
Example: *The* ~~***lithograph***~~ ***Atrani, a small town on the Amalfi Coast was made in 1931, but comes back for example, in his masterpiece Metamorphosis I and II.***

Say, "Next, copy the sentence to the back of your paper."

Say, "Now, mark through 'lithograph' and write in a synonym above. Let's think about this. Remember we wrote the verb lithography on our semantic map. Lithograph is actually a noun. Our words we wrote as synonyms are verbs. The word 'copy' could also be a noun. Let's use that word. Lithograph is a noun, so we also have to replace it with a noun."

Say, "Next step is to add the opposite part of speech. The vocabulary word lithograph is a noun. So, that means the opposite of lithograph *(noun)* is an adjective. What would be a great describing word for lithograph or copy? Allow for responses. I think the copy must be beautiful because it is of a small town on the coast." *(Use any of the students' responses that are appropriate descriptors.)*

Unit 2, Lesson 2 — Grades 5-6

Classroom Lesson - continued

beautiful
copy

Example: *The **~~litho~~graph** Atrani, a small town on the Amalfi Coast was made in 1931, but comes back for example, in his masterpiece Metamorphosis I and II.*

Say, "Finally, rewrite the new sentence on the front of the semantic map on the bottom line. You may also write beneath the line if necessary."

Allow students time to copy sentence.

Say, "This was the only word that we changed from its original form from the biography. The rest of the vocabulary words you can use your semantic maps to change the sentences. Discuss your thoughts with your partner on each sentence."

Circulate the room and provide assistance when necessary. Allow students time to change at least two sentences, more if time permits.

ELPS (*English Language Proficiency Standard*) 1E, 2H, 3D, 3I, 3J

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.C.3
MATH I.A.1., II.D.1., IV.B.1., VIII.A.1., VIII.A.2., VIII.B.2

Unit 2, Lesson 2 — Grades 5-6
Classroom Lesson - continued

Transition to Math

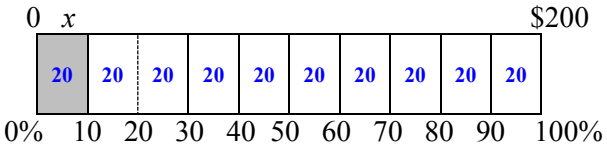
Review percent concepts. Students may work in small groups or with the teacher to solve the percent problems on BLM Percent of Interest and Tips. It is recommended that students continue to perfect the strip diagram/bar model. However, the ultimate goal is for students to transfer number sense from the bar model to mental math. Both are shown here in the lesson notes as possible solution strategies.

Problem #1 Mental Math Strategy

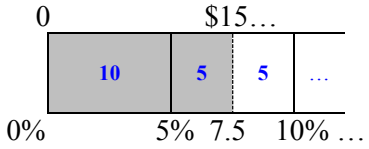
Need to find 7.5% of $200.
100% = $200
10% = $20
5 % = $10
2.5% = $5

The dollar amounts for 5% and 2.5% combined (7.5%) = $15.00. Terran will earn $15.00 on the money in her bank account.

Problem #1 Bar model Strategy



Now focus on breaking down the first "chunk" of 10%. The diagram has been enlarged to show the small divisions in the first "chunk." Shaded region represents 7.5%, which equals $15.00.



Problem #2 Mental Math Strategy

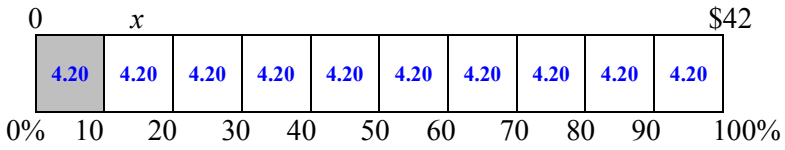
General tipping etiquette for wait staff in a restaurant is 15% of your total bill if service is good. Anything over 15% rewards the waiter for service above and beyond normal duties.
Need to find 15% of the food bill that costs $42.00.
100% = $42
10% = $4.20
5% = $2.10

The dollar amounts for 10% and 5% combined (15%) = $6.30. Garett will leave a $6.30 tip on top of his bill.

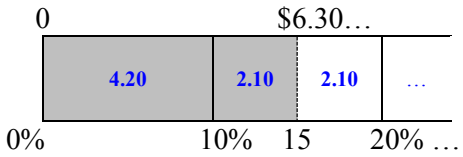
Unit 2, Lesson 2 — Grades 5-6

Classroom Lesson - continued

Problem #2 Bar Model Strategy



Now focus on breaking down the second "chunk" of 10%. The diagram has been enlarged to show the division of half in the second "chunk." Shaded region represents 15%, which equals $6.30.

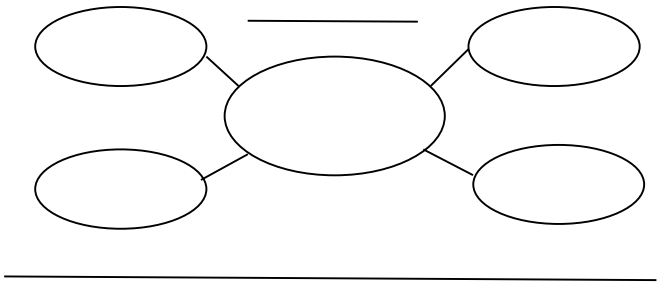


Objectives

Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 2 Lesson 2 – Classroom Lesson
Four per student

Semantic Map



Unit 2 Lesson 2 – Transition to Math
One per student

Percent of Interest and Tips

Work with a partner to solve the problems on this sheet. Use a bar model or mental math strategies to find the values.

1. Terran deposited $200 in a bank account that would earn 7.5% interest over a year. If she didn't touch the money, how much interest would she earn?

2. Garett took his girlfriend out to eat for lunch. The bill was $42.00. Their waiter did a good job keeping their drinks full and table cleared of dirty dishes. Garett decided to leave a 15% tip. How much would the tip be?

Unidad 2 Lección 2 – Transición a las matemáticas
1 por estudiante

Porcentaje de interés y propinas

Colabora con un compañero para resolver los problemas de esta hoja. Usa un modelo de barra o estrategias de matemáticas mentales para encontrar los valores.

3. Terran depositó $200 en una cuenta bancaria que le rendirá 7.5% de interés en un año. Si no toca el dinero, ¿cuántos intereses ganaría?

4. Garett llevó a su novia a comer. La cuenta fue de $42.00. Su mesero hizo un buen trabajo en mantener sus vasos llenos y la mesa libre de platos sucios. Garett decidió dejar una propina del 15%. ¿De cuánto sería la propina?

Materials
- picture of *Metamorphosis I* by M.C. Escher
- **BLM** Pattern Block Pizazz (2 of 3) Measurement Lab Record Sheet
- **BLM** Hexagonal Tessellations #1
- **BLM** Equivalent Ratios

Math Vocabulary
fraction
ratio
percent
tessellation
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
lithograph
predecessors
tapestries
mural
architecture
linoleum
perspective

ELPS (*English Language Proficiency Standard*) 3C, 3D, 3F, 3G, 4H

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.2., I.E.1., II.C.1.
ELA I.A.2., I.A.3., II.A.4., III.A.1., IV.A.1., IV.B.1.
MATH II.A.2., II.C.1., II.D.1., IV.B.1., VIII.A.3., VIII.A.5.

Teacher Note
The Transition to Math was utilized as a review piece for today. The TV Lesson will start a new concept unrelated to the Transition.

Unit 2, Lesson 2 — Grades 5-6

TV Lesson

Math Objectives:
- Use ratios to describe proportional situations.
- Represent ratios and percents with concrete models, fractions, and decimals.
- Use ratios to make predictions in proportional situations.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Building Background
See Teacher Note in sidebar.
Display the picture *Metamorphosis I* for students to see either on a projector or as a BLM. Hold a whole group discussion about their mathematical observations of the artwork. Observations may include triangles, hexagons, rhombi, hexagon, etc. Ask them for comparisons between this one and *Verbum*.

Comprehensible Input
Today students will work to perfect the strategy of setting up equivalent ratios in an equation format to solve for an unknown using the information discovered in the Measurement Lab. This is a very abstract and algebraic way to solve. The solution process focuses on multiplicative relationships between the ratios. Students have had experience with this strategy in Unit 1.

The purpose of the problems in today's TV Lesson is to expose students to proportional situations that increase and decrease. They will also be asked to determine if ratios are proportional. To make the ratios easier to understand, refer to the pieces by their triangular composition. The tessellation pieces will be viewed as a composition of different colored triangles instead of different polygons (rhombus, trapezoid, etc.).

Problem #1
The basic green to blue triangle ratio for one tessellation piece is 2:4. Jessica counted 10 green triangles on her paper, and we know her tessellations were completely colored. Students can set these ratios equal to each:

$$\frac{2 \text{ green triangles}}{4 \text{ blue triangles}} = \frac{10 \text{ green triangles}}{? \text{ triangles}}$$

Both the scale factor and constant of proportionality will be shown here to expose students to both. But they only need to find one when solving problems.

Teacher Note
If ratios are equivalent, then they are considered proportional. Inversely, if ratios are proportional, then they will be equivalent. There are two multiplicative relationships to look for first. The scale factor and/or the constant of proportionality. They are also referred to as covariant and invariant relationships.

Teacher Note
It is important that students label their ratios in order to keep them consistent. Monitor class to make sure they are labeling.

Scale Factor-Covariant Relationship

$$\frac{2 \text{ green triangles}}{4 \text{ blue triangles}} \overset{\times 5}{=} \frac{10 \text{ green triangles}}{? \text{ triangles}}$$

"How do I get from two to 10 green triangles?" *(Multiply by five. Remember this is a multiplicative relationship always. Never additive.)* She finished coloring each tessellation piece so we know that the ratios will be proportional. This means the scale factor must hold true for the blue triangles. 4 x 5 = 20 blue triangles.

Constant of Proportionality-Invariant Relationship

$$\overset{\times 2}{\frac{2 \text{ green triangles}}{4 \text{ blue triangles}}} = \frac{10 \text{ green triangles}}{? \text{ triangles}} \overset{\times 2}{}$$

"What is the relationship from two green triangles to four blue triangles?" *(Multiply by two; or double. Remember this is a multiplicative relationship always. Never additive.)* She finished coloring each tessellation piece so we know that the ratios will be proportional. This means the constant of proportionality must hold true for the second ratio. 10 x 2 = 20 blue triangles.

Problem #2

Students can set Devon and Farrah's ratios equivalent to each other because we know both of their tessellation pieces were completely colored.

$$\frac{32 \text{ green}}{64 \text{ blue}} = \frac{? \text{ green}}{16 \text{ blue}}$$

"How is this setup different than Problem #1?" *(unknown is in different place and the ratios go from larger numbers to smaller numbers)*

Scale Factor-Covariant Relationship

$$\frac{32 \text{ green}}{64 \text{ blue}} \overset{\div 4}{=} \frac{? \text{ green}}{16 \text{ blue}}$$

"How do I get from 64 to 16 blue triangles?" *(Divide by four. Remember this is a multiplicative relationship always. Never additive.)* This may not be an easy relationship for some students to make. That's why we teach them to look for ALL relationships. The invariant is much easier.

They both finished coloring each tessellation piece so we know that the ratios will be proportional. This means the scale factor must hold true for the green triangles. 32 ÷ 4 = 8 green triangles.

Teacher Note
The division should actually be written as $(x\frac{1}{4})$. Either way is acceptable for now, but students should understand that division may not be accepted by some teachers later in school.

Constant of Proportionality-Invariant Relationship

$$\overset{x2}{\circlearrowleft}\ \frac{32 \text{ green}}{64 \text{ blue}} = \frac{? \text{ green}}{16 \text{ blue}}\ \overset{x2}{\circlearrowright}$$

"What is the relationship from 32 green triangles to 64 blue triangles?" *(Multiply by two; or double. Remember this is a multiplicative relationship always. Never additive.)* They both finished coloring each tessellation piece so we know that the ratios will be proportional. This means the constant of proportionality must hold true for the second ratio. "What, times two, equals 16 blue triangles?" *(8)* Farrah colored eight green triangles.

Problem #3
Students are asked to verify whether or not the ratios given are equivalent *(proportional)*. They can look for either the scale factor or constant of proportionality. Students may realize quickly that the scale factor relationship is difficult to find mathematically. But, the invariant relationship should be the same as all other examples and the basic ratio given to them of 2:4.

"What have you noticed between all of the ratios we have worked with in this lesson?" *(All invariant relationships are 1:2, or the blue is always double the green, or green is always half of blue.)*

"If we double 22, do we get 44?" *(Yes. Devon's ratio is correct and proportional to the basic ratio.)*

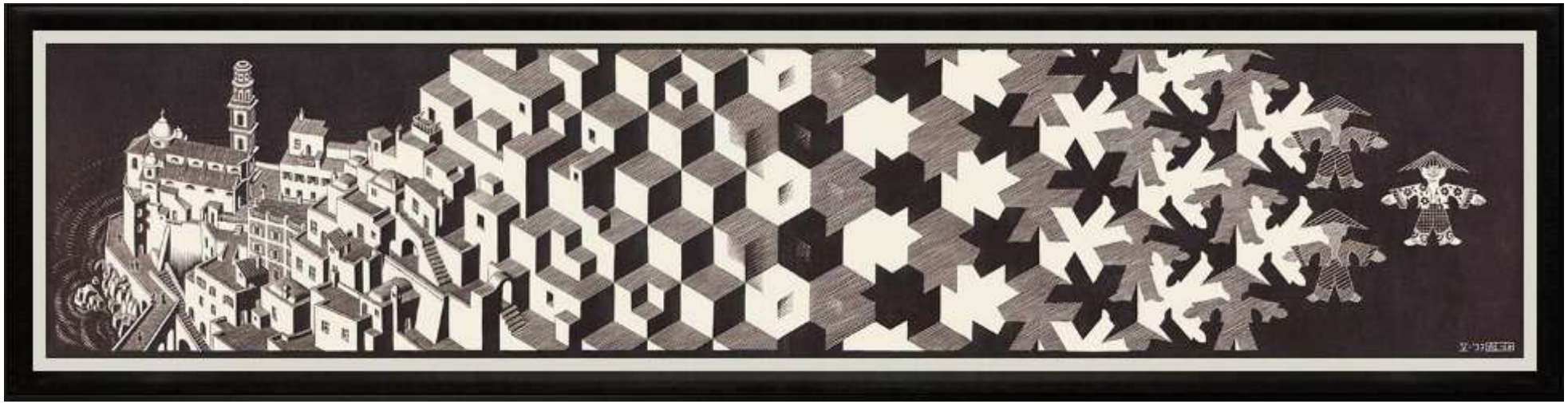
"If I double 18, will I get 34?" *(No; double 18 = 36.)*

"What does that tell us?" *(Farrah's ratio is not a 1:2 relationship. Devon's observation is correct. She forgot to color two blue triangles.)*

	Unit 2, Lesson 2 **Grades 5-6** **TV Lesson** - continued **----------** **Pirate's Corner** Tell Captain Portio and the TV Teacher what you learned during your lessons today. What is the most important thing that stands out in your mind? **Objectives:** Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 2 Lesson 2 – TV Lesson

Metamorphosis I by M.C. Escher, 1937 Woodcut



Unit 2 Lesson 2 – TV Lesson
One per student

Equivalent Ratios

Work with your teacher and peers to complete this activity. Use the information and skills you discovered in today's Measurement Lab to help with the relationships.

*The tessellation pieces will be viewed as a composition of different colored triangles to keep things simple, as shown in the picture. Tessellation piece = one full hexagon

Basic Triangular Composition Ratio
2 green triangles to every 4 blue triangles to make 1 tessellation piece

Style A  OR  Style B

1. Jessica finished coloring several of the same tessellation pieces you worked on today. She counted 10 green triangles. Using the basic ratio above, how many blue triangles will also be colored if 10 green triangles were counted?

2. Devon realized that the tessellation pieces he colored used 32 green triangles and 64 blue triangles. Farrah had only completed a few of her tessellation pieces and counted 16 blue triangles. How many green triangles would be colored on her paper?

3. Angel and Vanessa counted the amount of green and blue triangles they finished coloring on their sheet. They set up the green:blue triangle ratios to show the comparison. Angel's ratio was $\frac{22}{44}$ and Vanessa wrote $\frac{18}{34}$. Angel claimed that Vanessa must not have finished coloring each tessellation piece? Do you agree? Why or why not?

Materials
- **BLM** Hexagonal Tessellations #1
- **BLM** Tessellation Creation!
- **BLM** Example Tessellation Picture
- scissors
- clear tape
- glue stick
- copy paper

1 per student

Math Vocabulary
fraction
ratio
percent
tessellation
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
lithograph
predecessors
tapestries
mural
architecture
linoleum
perspective

Proficiency Standard) 3C, 3D, 3F, 3G, 4H, 5A, 5B, 5C

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.2., I.E.1., II.C.1.
ELA I.A.2., I.A.3., II.A.4., 5B,
MATH III.A.1., III.A.2.,II.C.2., III.B.1., VII.A.2.

Unit 2, Lesson 2 — Grades 5-6

Follow-up

Math Objectives:
- Use ratios to describe proportional situations.
- Represent ratios and percents with concrete models, fractions, and decimals.
- Use ratios to make predictions in proportional situations.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Practice and Application
Work as a whole class to answer the equivalent ratio question before allowing students to start the assembly of their tessellations.

The purpose of this problem is to set up a situation where the invariant and covariant relationships are not easy to find mentally. They will learn the strategy of cross-multiplying. Cross-products will be equivalent as long as the ratios are proportional. This strategy is considered a "last ditch effort" strategy when other relationships are too difficult to find.

Ticket to Tessellate
Delani's ratio of strawberries to blueberries was 6:8. We know she has 20 blueberries in the bowl. The equations would be set up:

$$\frac{6 \text{ strawberries}}{8 \text{ blueberries}} = \frac{x \text{ strawberries}}{20 \text{ blueberries}}$$

Some students may recognize that the scale factor is actually simple at *(x2.5)*, but continue to work the problem with cross-multiplication.

"How are the scale factor and constant of proportionality looking? Do the relationships appear to be easy?" *(no)*

"When we come upon this situation, we are able to use a strategy called cross-multiply. When ratios are proportional their cross-products will be equivalent as in this easy example."

$$\frac{6}{9} \overset{72}{\underset{72}{\times}} \frac{8}{12}$$

9 x 8 and 6 x 12 both equal 72. Students can use this relationship to solve for an unknown.

Follow-up - continued

---

120 8x

$$\frac{6 \text{ strawberries}}{8 \text{ blueberries}} \quad \frac{x \text{ strawberries}}{20 \text{ blueberries}}$$

New equation is: $8x = 120$

"8 times what equals 120?" *(15. Let students use a variety of strategies to figure this out.)*

Students should follow the assembly directions on the BLM. Monitor and make sure they are cutting straight lines otherwise the tessellation pieces will not fit together properly.

Display completed tessellations around the room.

Recursive Review

Please use **BLM** *to answer the Recursive Review questions.*

- $\frac{5}{7} - \frac{2}{14} = ???$

Writing Topics

Independent Writing Topic

Students will have a daily writing activity which will incorporate the day's focus math vocabulary.

- **Explain the difference between scale factor and the constant of proportionality.**

Objectives

Review the math and language objectives to make sure that they were accomplished and that the students realize how they were accomplished.

Unit 2 Lesson 2 – Follow-up
One per student

Tessellation Creation!

Work with your teacher to answer the Ticket to Tessellate problem, then follow the assembly directions to create your very own tessellation like M.C. Escher! It is important to cut very straight lines.

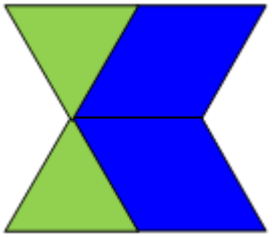
Ticket to Tessellate Problem
Delani was making a fruit salad with a strawberry to blueberry ratio of 6:8. If she has 20 blueberries in the refrigerator, how many strawberries should she use if she sticks to the recipe?

Tessellation Assembly Directions

- Carefully cut out each hexagon.
- Follow the specific **Style Cutting Directions** for whichever style you chose (below).
- Tape the pieces together on the back.
- Fit your new tessellation pieces together like a puzzle (NO overlaps, NO gaps). You may rotate pieces if needed.
- After your tessellation is created, glue the pieces to the copy paper.

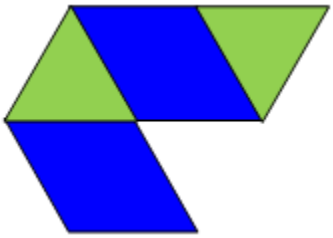
Style Cutting Directions
Style A:

- cut out both green triangles
- transfer them to the left side
- tape them as shown in the picture
- repeat for all 16 pieces



Style B:

- cut out ONE green triangle (bottom right)
- transfer it to the right side of the top blue rhombus
- tape it as shown in the picture
- repeat for all 16 pieces



Unidad 2 Lección 2 – Seguimiento

1 por estudiante

¡Creación de mosaicos!

Colabora con tu maestro para responder el problema de Boleto al Mosaico, y luego sigue las instrucciones de armado para crear tu propio mosaico, ¡como MC Escher! Es importante cortar en líneas muy derechas.

Problema Boleto al Mosaico

Delani estaba haciendo una ensalada de frutas con una relación de fresas a arándanos de 6:8. Si tiene 20 arándanos en el refrigerador, ¿cuántas fresas debe usar si se adhiere a la receta?

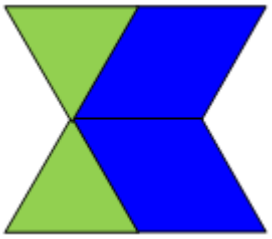
Instrucciones de armado del mosaico

- Recorta cuidadosamente cada hexágono.
- Sigue las **instrucciones de corte por estilo** específicas al estilo que hayas elegido (ver abajo).
- Une las piezas con cinta en la parte posterior.
- Haz encajar tus nuevas piezas de mosaico como un rompecabezas (SIN superposiciones NI huecos).
  Puedes rotar las piezas si es necesario.
- Después de crear tu mosaico, pega las piezas con pegamento al papel para copias.

Instrucciones de corte por estilo:

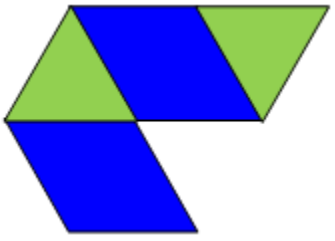
Estilo A:

- recorta los dos triángulos verdes
- transfiérelos al lado izquierdo
- pégalos con cinta como en la figura
- repite para todas las 16 piezas



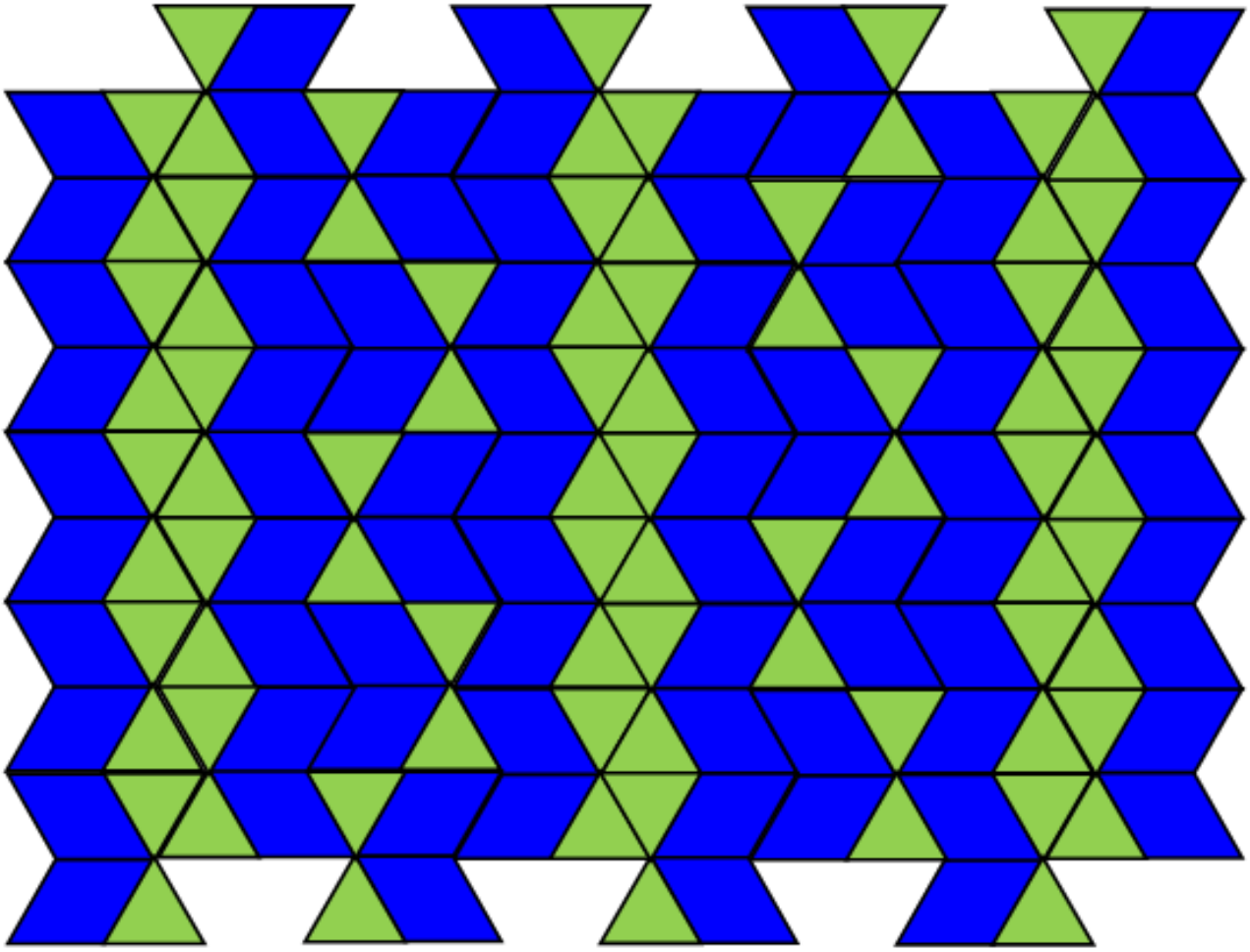
Estilo B:

- recorta UN triángulo verde (inferior derecho)
- muévelo al lado derecho del rombo azul superior
- pégalo con cinta como en la figura
- repite para todas las 16 piezas



Unit 2 Lesson 2 – Follow-up
Teacher copy

Example Tessellation



Materials
- 2 paper dessert plates
- 2 paper towels
- 1 plastic knife
- 2 pieces wax paper
- 2 pair of scissors
- 2 cups trail mix (pre-packaged or home-made)

Allergy Warning – please substitute a nut-free mix for the entire class if nut allergies are present.

All items listed above per partner pair
- **BLM** Trail Mix-Snack Fractions
- **BLM** Trail Mix-Snack Fractions Teacher Guide

Math Vocabulary
fraction
ratio
percent
tessellation
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
lithograph
predecessors
tapestries
mural
architecture
linoleum
perspective

Unit 2, Lesson 2 — Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents.
- Convert between fractions, decimals, and percents.
- Estimate to find solutions to problems involving fractions, decimals, and percents.

Language Objectives
- Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.

Snack Fractions
Tell students they will use the same process today that they used in the Snack Fraction for Lesson 1. Students should have the skills to answer these in small groups. Have the students work through the BLM before sharing the actual snack.

Circulate the room while students are working on the BLM, asking questions as needed to guide, redirect, extend:

QUESTIONS
- What does this fraction mean?
- How did you know where to "cut" the trail mix?
- How did you change your decimal to a percent?

Once the activity is complete, let them enjoy their trail mix!

Snack Fraction Journal Writing: BLM Trail Mix-Snack Fractions
Explain how you found the percent for two-fifths of the trail mix.

Objectives: Review the objectives with the class, making sure they understand how they achieved each.

Unit 2 Lesson 2 – Snack Fractions
One per student

Trail Mix – Snack Fractions

Divide the snack equally between the two of you. Work with your partner to solve the problems.

1. What fraction represents your portion of trail mix out of the whole?
   word _____ fraction _____
   decimal _____ percent _____

2. Shade the diagram to represent your portion.

Now pretend there are five of you sharing the whole snack.

3. What fraction represents your portion of trail mix out of the whole?
   word _____ fraction _____
   decimal _____ percent _____

4. Shade the diagram to represent your portion.

5. What fraction represents your portion and your partner's portion together out of the whole?
   word _____ fraction _____
   decimal _____ percent _____

6. Shade the diagram to represent both of your portions.

Unidad 2 Lección 2 – Fracciones de refrigerios
1 por estudiante

Granola – Fracciones de refrigerio

Divide el refrigerio de manera equitativa entre los dos. Colabora con tu compañero para resolver los problemas.

7. ¿Qué fracción representa tu porción de granola del <u>entero</u>?

palabras	_____	fracción	_____
decimal	_____	porcentaje	_____

8. Sombrea el diagrama para representar tu porción.

Ahora imagina que son 5 de ustedes los que comparten el refrigerio.

9. ¿Qué fracción representa tu porción de granola del <u>entero</u>?

palabras	_____	fracción	_____
decimal	_____	porcentaje	_____

10. Sombrea el diagrama para representar tu porción.

11. ¿Qué fracción representa tu porción y la de tu compañero juntas del <u>entero</u>?

word	_____	fraction	_____
decimal	_____	percent	_____

12. Sombrea el diagrama para representar las dos porciones.

Unit 2 Lesson 2 – Snack Fractions
One per student

Trail Mix – Snack Fractions Teacher Guide

Divide the snack equally between the two of you. Work with your partner to solve the problems.

1. What fraction represents your portion of trail mix out of the whole?

word	one-half	fraction	$\frac{1}{2}$
decimal	0.5	percent	50%

2. Shade the diagram to represent your portion.

Now pretend there are five of you sharing the whole snack.

3. What fraction represents your portion of trail mix out of the whole?

word	one-fifth	fraction	$\frac{1}{5}$
decimal	0.2	percent	20%

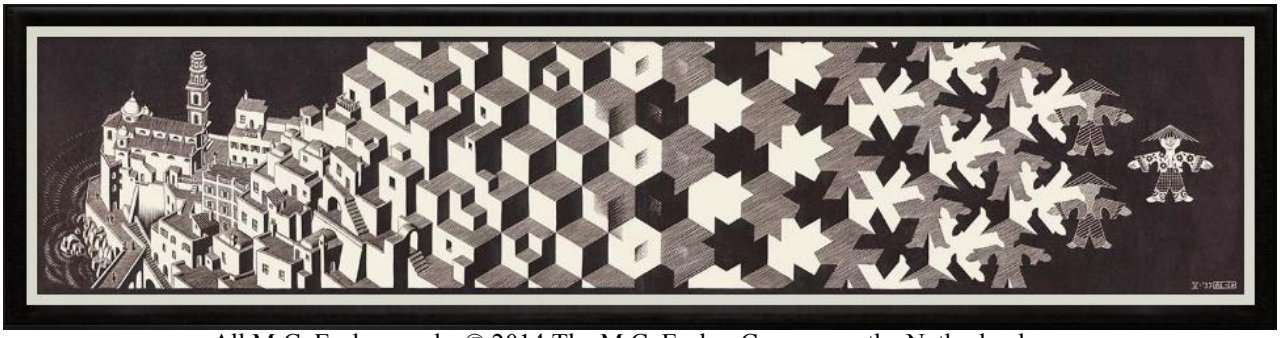
4. Shade the diagram to represent your portion.

5. What fraction represents your portion and your partner's portion together out of the whole?

word	two-fifths	fraction	$\frac{2}{5}$
decimal	0.4	percent	40%

6. Shade the diagram to represent both of your portions.

Unit 2 Lesson 2 – Family Fun



Dear _____,

We studied another piece by M.C. Escher today. The 1937 Woodcut named *Metamorphosis I* is mathematical because…

_____

_____

_____

I created my own tessellation in class. A tessellation is…

_____

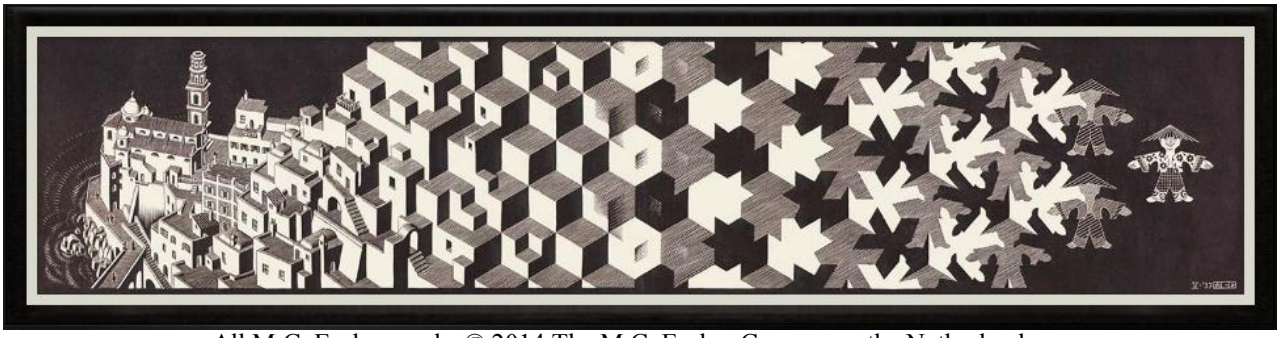
_____

_____

Sincerely,

_____

Unit 2 Lesson 2 – Family Fun



Querido _____,

Hoy estudiamos otra pieza de MC Escher. El grabado en madera de 1937 titulado *Metamorfosis I* es matemático porque...

_____

_____

_____

Creé mi propio mosaico en clase. Un mosaico es...

_____

_____

_____

Materials
- **BLM** Pattern Block Pizazz (3 of 3) Measurement Lab Record Sheet
- **BLM** Pattern Block Pizazz (3 of 3) Teach Guide
- **BLM** Hexagonal Tessellations #2
- **BLM** Solve It! Problem 4
- **BLM** Fraction Action and *X* Marks the Spot
- **BLM** Lessons 1-3 CGI Biography and Artwork of MC Escher http://www.mcescher.com/

Math Objectives
- Solve problems using a measurement tool and calculating measurements.
- Model and solve multistep word problems.
- Solve problems involving fractions, ratios, and proportions.
- Solve for a variable.
- Compose and decompose numbers.

Language Objectives
- Speak to partners, teacher, and class using vocabulary.
- Discuss problem solving process and strategies.

Math Vocabulary
fraction
ratio
percent
tessellation

Literature Vocabulary
lithograph
predecessors
tapestries
mural
architecture
linoleum
perspective

Assessed TEKS for this Unit
- 5th – 5.3H*, 5.3K*
- 6th – 6.3A, 6.5B*, 6.3B, 6.3C

**denotes Revised 2014 TEKS*

Unit 2, Lesson 3 — Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post-assessment. They are not optional.

ESSENTIAL

Measurement Lab
- Lesson 1 – *Pattern Block Pizazz (1 of 3)* (5th assessment items 1,2,3)
- Lesson 2 – Pattern Block Pizazz (2 of 3) (6th assessment item 5)
- **Lesson 3 – Pattern Block Pizazz (3 of 3) (6th assessment item 5)**

Lesson 3 Materials
Printing the **BLM** Hexagonal Tessellations 2 on cardstock is essential for this activity. The sturdy paper will hold up to the cutting, taping, and gluing that will happen later in today's lesson.
- black, red, blue, and green markers

Lesson 3 Student Pairs
Today's activity is essentially a continuation of Lesson 2 Measurement Lab. The triangle is still used as the unit of measure.
1) Color hexagons as per instructions on BLM Hexagonal Tessellations #2.
2) Students answer questions using the colored hexagons.

Solve It! Multi-step problem solving
- Lesson 1 – *pairs, 2-step* (6th assessment item 7)
- Lesson 2 – pairs, 2-step (6th assessment item 4)
- **Lesson 3 – independent, 2-step (6th assessment item 8)**

Fraction Action
- Lesson 1 – *(5th assessment item 6)*
- Lesson 2 – (5th assessment item 6)
- **Lesson 3 – (5th assessment item 6)**

***X* Marks the Spot**
- Lesson 1 – (5th assessment item 6)
- Lesson 2 – (6th assessment item 2,4,7,8)
- **Lesson 3 – (6th assessment item 2,4,7,8)**

CGI
- Lesson 1 – Lesson 1 - Part-Part-Whole, Part Unknown (5th grade Assessment Item 4)
- Lesson 2 – Rate, Partitive Division (6th grade Assessment Item 6)
- **Lesson 3 – Compare, Referent Unknown (5th grade Assessment Item 5)**

ELPS (*English Language Proficiency Standard*) 1G, 2F, 2G, 3C, 3E, 3F, 4I

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.C.2., I.C.3., II.D.1
ELA II.A.2., II.A.4., II.B.2.
MATH I.A.2., I.C.1., II.A.1., II.B.1., IV.B.1., VII.A.1., VIII.A.2., VIII.B.2.

Unit 2, Lesson 3 — Grades 5-6

Daily Routine - continued

The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.

OPTIONAL

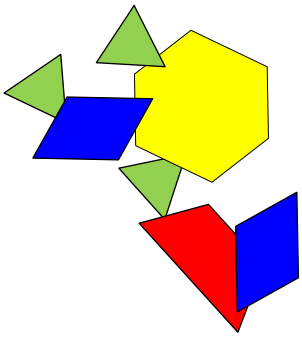
Target Number

- Lesson 1 – *omit*
- Lesson 2 – Target Number 12
- **Lesson 3 – Target Number 24**

Money Matters

(*If you have a full program and wish to use this optional activity, you will find BLMs and Explanations on MAS Space*.)

Unit 2 Lesson 3 – Daily Routines – Measurement Lab
One per student



Pattern Block Pizazz (3 of 3) – Measurement Lab Record Sheet

Materials:

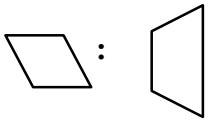
- black, red, blue, and green markers

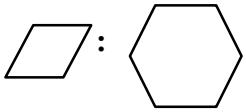
Task:

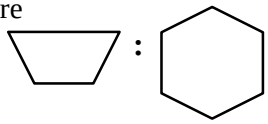
- Color the hexagons on BLM Hexagonal Tessellations #2 using the markers.
- Work with your partner or group to generate the following ratios.

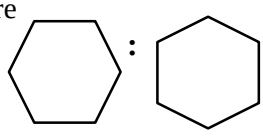
unit of measure = 

1. How many triangles does it take to make one rhombus?
   The triangular composition ratio for a rhombus to rhombus comparison would be…
   word _____ picture
   colon _____ 
   fraction _____

2. How many triangles does it take to make one trapezoid?
   The triangular composition ratio for a rhombus to trapezoid comparison would be…
   word _____ picture
   colon _____ 
   fraction _____

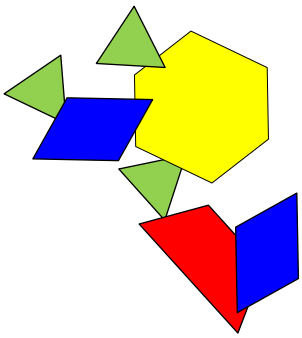
3. How many triangles does it take to make one hexagon?
   The triangular composition ratio for a rhombus to hexagon comparison would be…
   word _____ picture
   colon _____ 
   fraction _____

4. The triangular composition ratio for a trapezoid to hexagon comparison would be…
   word _____ picture
   colon _____ 
   fraction _____

5. The triangular composition ratio for a hexagon to hexagon comparison would be…
   word _____ picture
   colon _____ 
   fraction _____

You will need this sheet during the TV Lesson.

Unit 2 Lesson 3 – Daily Routines – Measurement Lab
One per student



Pattern Block Pizazz (3 of 3) – Measurement Lab Record Sheet

Materiales:

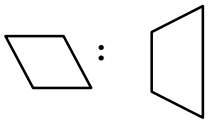
- marcadores negro, rojo, azul y verde

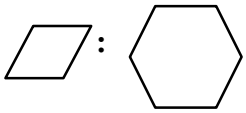
Task:

- Colorea los hexágonos en el BLM Hexagonal Tessellations #2 usando los marcadoes.
- Trabaja con un compañero para crear las siguientes razones:

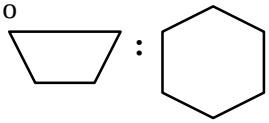
Unidad de medida = 

1. ¿Cuántos triaágulos se necesitan para formar 1 rombo?
   La razón para la composición triangular para una comparación de rombo a rombo sería
   palabra _____ dibujo
   colon _____ 
   fracción _____

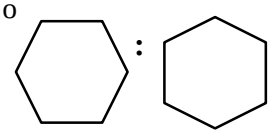
2. ¿Cuántos triaágulos se necesitan para formar 1 trapezoide?
   La razón para la composición triangular para una comparación de rombo a trapezoide sería
   palara _____ dibujo
   colon _____ 
   fracción _____

3. ¿Cuántos triaágulos se necesitan para formar 1 hexágono?
   La razón para la composición triangular para una comparación de rombo a hexágono sería
   palabra _____ dibujo
   colon _____ 
   fracción _____

4. La razón para la composición triangular para una comparación de trapezoide a hexágono sería

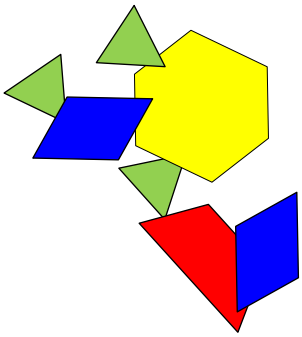
   palabra _____ dibujo
   colon _____ 
   fracción _____

5. La razón para la composición triangular para hexágono de rombo a hexágono sería

   palabra _____ dibujo
   colon _____ 
   fracción _____

You will need this sheet during the TV Lesson.

Unit 2 Lesson 3 – Daily Routines – Measurement Lab
One per student



Pattern Block Pizazz (3 of 3) – Teacher Guide

Materials:

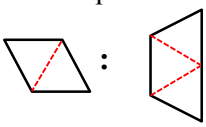
- black, red, blue, and green markers

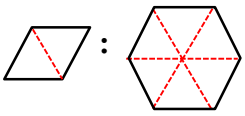
Task:

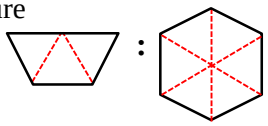
- Color the hexagons on BLM Hexagonal Tessellations #2 using the markers.
- Work with your partner or group to generate the following ratios.

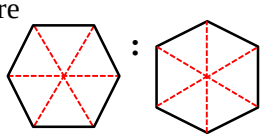
unit of measure = 

1. How many triangles does it take to make one rhombus?
   The triangular composition ratio for a rhombus to rhombus comparison would be…
   word two to two
   colon 2:2
   fraction $\frac{2}{2}$
   picture 

2. How many triangles does it take to make one trapezoid?
   The triangular composition ratio for a rhombus to trapezoid comparison would be…
   word two to three
   colon 2:3
   fraction $\frac{2}{3}$
   picture 

3. How many triangles does it take to make one hexagon?
   The triangular composition ratio for a rhombus to hexagon comparison would be…
   word two to six
   colon 2:6
   fraction $\frac{2}{6}$
   picture 

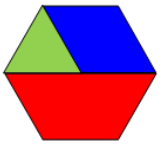
4. The triangular composition ratio for a trapezoid to hexagon comparison would be…
   word three to six
   colon 3:6
   fraction $\frac{3}{6}$
   picture 

5. The triangular composition ratio for a hexagon to hexagon comparison would be…
   word six to six
   colon 6:6
   fraction $\frac{6}{6}$
   picture 

Unit 2 Lesson 3 – Daily Routines – Measurement Lab
One per student

Hexagonal Tessellations #2

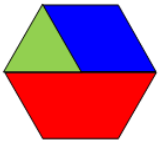
Color each tessellation piece exactly as the one shown below. Show a black line of separation between triangles and rhombi.



Unit 2 Lesson 3 – Daily Routines – Measurement Lab
One per student

Hexagonal Tessellations #2

Colorea cada mosaico exactamente como el ejemplo abajo. Muestra una raya negra de separación entre triángulos y rombos.



Unit 2 Lesson 3 – Daily Routines - Solve It! Problems (individual)
One per student

Problem 4:
Channing was an excellent waiter. He always went above and beyond for his guests. His biggest table of the night was a 20-top (20 people). Their total bill was $526.00, but the host of the party wanted to leave Channing a 30% tip for his outstanding work. How much would the bill be after adding the tip?
**Hint – finding 10% is usually a good place to start when dealing with percents.*

Problem Solution Name:	**Solution Verification** Name:

Unit 2 Lesson 3 – Daily Routines - Solve It! Problems (individual)
One per student

Problema 4:

Channing era un excelente mesero. Siempre daba un esfuerzo extra para sus clientes. Su mesa más concurrida de la noche era de 20 asientos (20 personas). Su cuenta total fue de $526.00, pero el anfitrión de la fiesta quería dejar a Channing una propina del 30% por su excelente trabajo. ¿De cuánto sería la cuenta después de sumar la propina?
**Pista - encontrar el 10% suele ser un buen comienzo al calcular porcentajes.*

Solución del problema: Nombre:	**Verificación de la solución:** Nombre:

Unit 1 Lesson 3 – Daily Routines - Solve It! Problems (individual) **5-6**
1 per student

Partner 2 - Problem 5:
Krystal was an excellent waitress. She always went above and beyond for his guests. Her biggest table of the night was a 12-top (12 people). Their total bill was $318.00, but the host of the party wanted to leave Krystal a 30% tip for his outstanding work. How much would the bill be after adding the tip?
**Hint – finding 10% is usually a good place to start when dealing with percents.*

Problem Solution Name:	**Solution Verification** Name:

Unit 1 Lesson 3 – Daily Routines - Solve It! Problems (individual) **5-6**
1 per student

Partner 2 - Problem 5:
Krystal era una excelente mesera. Siempre daba un esfuerzo extra para sus clientes. Su mesa más concurrida de la noche era de 12 asientos (12 personas). Su cuenta total fue de $318.00, pero el anfitrión de la fiesta quería dejarle a Krystal una propina del 30% por su excelente trabajo. De cuánto sería la cuenta después de sumar la propina?
**Pista - encontrar el 10% suele ser un buen comienzo al calcular porcentajes.*

Solución del problema Nombre:	**Verificación de la solución** Name:

Unit 2 Lesson 3 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

Materials:
None for this activity

Task:
Matt was practicing his field goal kicks at the football field after school. His first kick wasn't very far at $43\frac{1}{2}$ yds. After getting warmed up he kicked the ball $60\frac{1}{3}$ yds. and 70.5 yds. What was his total field goal yardage that day?

X Marks the Spot

Solve for *x*.

15%	**of *x***	**= $7.50**
30%	**of *x***	**= $15.00**
45%	**of *x***	**= $22.50**

One per student

Fraction Action

Materiales:
ninguno para esta actividad

Tarea:
Matt estaba practicando sus patadas de gol de campo en el campo de fútbol después de la escuela. Su primera patada no fue muy larga, pues sólo recorrió 43 $\frac{1}{2}$ yds. Después de calentar, pateó el balón 60 $\frac{1}{3}$ yds y 70.5 yds. ¿Cuál fue su yardaje total de goles de campo ese día?

X Marca el sitio

Resuelve para *x*.

15%	**de *x***	**= $7.50**
30%	**de *x***	**= $15.00**
45%	**de *x***	**= $22.50**

- **BLM** Word Cards Lesson 1
- Students' completed note taking paper from lesson 1
- 7 4x6 (preferably) lined any color index cards per student
- **BLM** Day and Night
- **BLM** M.C. Escher Biography (option) lesson 1
- **BLM** Percent of Tax and Interest

Literature Selection
Biography and Artwork of M.C. Escher
http://www.mcescher.com/

Math Vocabulary
fraction
ratio
percent
tessellation
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
lithograph
predecessors
tapestries
mural
architecture
linoleum
perspective

ELPS (*English Language Proficiency Standard*) 1G, 2F, 2G, 3C, 3E, 3F, 4I, 5B, 5C, 5F

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR II.A.2., II.A.3., II.A.5., II.B.2.
ELA I.A.1., I.A.2., II.A.3., II.A.7., II.A.8., II.A.9, III.B.2.

Technology Option
https://www.mcescher.com
https://www.wordsmyth.net

Unit 2, Lesson 3 — Grades 5-6

Classroom Lesson

Every day teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

Math Objectives:

- Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models.
- Represent ratios and percents with concrete models, fractions, and decimals.

Reading Objectives:

- Analyze, make inferences and draw conclusions about expository text and provide evidence from text to support comprehension.
- Summarize the main idea and supporting details in text, demonstrate an understanding that a summary does not include opinions.
- Synthesize information from text and note taking to create summary of reading.

Language Objectives:

- Listen and respond to questions orally.
- Orally retell the summary of an expository text.
- Write a 75-90 word précis for an expository text.

Building Background – Vocabulary & Literature

From the website **https://www.mcescher.com** bring up the picture from the gallery of M.C.Escher's *Day and Night,* or BLM Day and Night.

Say, "We have been discovering this week the life and work of M.C. Escher. This is one of his more popular woodcuts named "Day and Night". Take a moment to look at the details. What is M.C. Escher depicting in this picture? Or What is it that is the main idea/focus of this picture? Think. Now turn to your partner and share." Allow for responses to be shared to class.

Suggested responses: Things appear different day to night. It is an example of a tessellation.

Say, "What is an idea from this illustration that supports this thought? Think. Now turn to your partner and share your thoughts."
Allow for responses to be shared to class.

Suggested responses: Geese are changing colors. The background is the same just shading is different depending on day or night.

Say, "Today we will be identifying the main idea, supporting ideas, and details from our reading of M.C. Escher's biography. We will use our notes from lesson one to complete our summary.

First- let's read through the vocabulary words from this selection." Display the word cards in a pocket chart or on the board. "Read the words as a group aloud to me."

Prompt through pointing to the words one at a time for students to read them aloud to you.

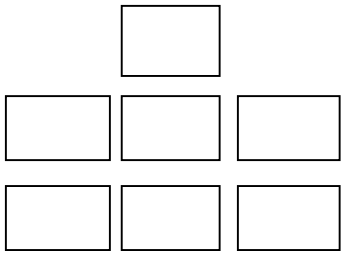
Say, "Awesome! This time I will point randomly to the words a little bit faster and I want you to read them to me. We will read for the words repeatedly for thirty seconds…ready, set - go!"

Start pointing randomly to cards. Students continue to read the cards to you for the full thirty seconds. When time is up say, "Stop! Awesome Job."

Comprehensible Input - Vocabulary & Literature
You will be guiding students through a summarization activity with the expository text utilizing the split note taking page from lesson 1 and 8 lined index cards.
Reread the entire passage as a class. Pausing and reflecting briefly on vocabulary words highlighted/studied in lesson 2. Ask such questions as, what is a synonym for this word? What does this word mean?

After reading the text, distribute seven index cards to each student. Students work with a partner, as well as with the teacher's assistance.

Say, "Today, we are going to create a pyramid summary for our reading. We can use a pyramid summary for non-fiction or expository text. When we have completed, we will have the cards laid on the table in a pyramid form. You will use the note taking page you completed in lesson 1 to help you complete your cards. The cards are another way of taking notes, so what we write on the cards will be short and might not be complete sentences."
Students begin with the index cards stacked.



Say, "First, let's determine the subject of our reading. What is the passage we read mostly about?"

Allow for responses.

Suggested responses: Maurits Cornelis Escher, M.C. Escher
Write the subject on the board. Students do not write this on a card.

Say, "Second, let's identify the main idea of the reading. The main idea is the most important statement or generalization about the subject. To determine the main idea, let's use a math statement."

Write on the board:
the subject + what the passage says about the subject = main idea

Say, "So, we know what the subject is, let's determine what the reading or passage says about the subject. Keep it simple! Turn to your partner and share your thoughts."

Allow students to share their thoughts with class. Encourage them to look back at the reading and reread *(especially the first two paragraphs)*. Direct them to look back at their notes.

Possible main idea:
M.C. Escher is one of the world's most famous graphic artists.

Students then write the main idea on a card. The card is placed at the top of their desks. This will be the apex of the pyramid.

Say, "We know that the main idea *(reread the main idea)*. Now, let's pull some ideas that support this main idea. The supporting ideas will support M.C. Escher as one of the world's most famous graphic artists. Reread the notes we took during lesson one to help determine support for the main idea. Think 'what makes M.C. Escher a famous graphic artist?' What did he study? What types of artwork helped make him famous? Why is his artwork famous? Supporting ideas tell more about the main idea.

Think through your strategy with your partner and we will share our ideas with the class. Do not write on your index cards. You can use your note taking page to write your ideas."

Circulate through class, assist partners with generating or pulling ideas from their notes/reading that support the main idea.

Possible supporting ideas:

- *Studied graphic art*
- *He created different types of artwork*
- *Travel was a source of much of his inspiration*

Unit 2, Lesson 3 — Grades 5-6

Classroom Lesson - continued

As a class, discuss the supporting ideas generated by the partners. Students decide on three supporting ideas *(three because the passage is not very long itself)* and write them on cards. One idea is written on each card. These three cards are placed in a row under the main idea.

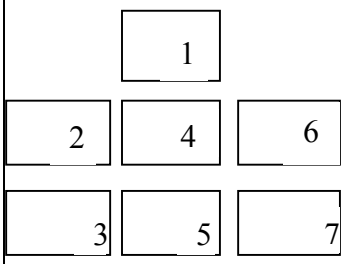
Say, "Finally, we are going to identify the details for each supporting idea. They make the description for the supporting ideas more vivid. The details will answer 'who' 'what' 'when' 'where' 'why' for the supporting details. The ideas serve as the base of the card summary pyramid we are constructing on our table. Remember to keep it simple. Think through your strategy with your partner and we will share our ideas with the class. Do not write on your index cards. You can use your note taking page and the reading to write the details."

Circulate through class, assist students with generating details from their notes that tell more about supporting ideas.

Suggested details:

- *Teacher and eventually father supported change from architecture to graphic art*
- *He created lithographs, woodcuts, wood carvings, and drawings*
- *Traveled to Italy, Spain, Switzerland*
- *He played with architecture, impossible spaces, and perspective*

(Note: students only need three details, one for each of the supporting ideas.) If the details are stated as complete sentences, then convert them into phrases or key words.



As a class, discuss the details generated by the partners. Students decide on three details that tell more about the supporting ideas *(three because the passage is not very long itself)* and write them on cards. One detail is written on each card. These three cards are placed in a row under the corresponding supporting idea, establishing the base of the card pyramid.

Guide students in numbering their cards. Writing the number in the bottom right corner of the card. Then, direct students to pick up their cards numerically beginning with number one card on top of the stack and ending with number seven card on the bottom of the stack. Students then take turns orally summarizing the reading using the cards.

Model:
If you have used the suggested main idea, supporting ideas, and details - this is a suggested summarization -
"*M.C. Escher is one of the world's most famous graphic artists. He studied graphic art after his teacher and father supported a change from architecture study to graphic art.*

Classroom Lesson - continued

M.C. Escher created many types of artwork including lithographs, woodcuts, wood carvings, and drawings. Many of his most famous works, which played with architecture, impossible spaces, and perspective, were inspired through his travels in Italy, Spain and Switzerland."

Encourage students to turn to their neighbor and give an oral summary of the reading using their cards. Their summaries may sound exactly alike - that is fine.

Practice and Application – Vocabulary & Literature

Say, "Fantastic! Now that you all have a summary of the reading, it's time to put it in written form. Today we will write a précis or a brief summarization of our reading. Our précis should not contain as many or more words than the actual text we are summarizing. Let's estimate how many words are in the reading. Count the first line. Count the first line on the next paragraph. So the average is 9 words. Now let's count the lines. There are about 65 lines of text *(leaving out short lines)*. 65 x 9 = There are about 585 words. Our précis should definitely be between 75-90 words. Decide how many words will be in your précis.

Distribute two sheets of writing paper to the students.

Say, "Write your number at the top left corner of your paper. Begin writing your summary with a sentence that includes the main idea from card 1. Then, continue by writing sentences that support the main idea and the details to give more vivid information about the ideas. Write a concluding sentence and then a title."

Allow time for students to write. Circulate the room and assist when necessary.

Guide students that supporting ideas will use key words and phrases from the reading. Help them understand that the concluding sentence is the restatement or rephrasing of the main idea.
After students complete their summary, ask them to count their words in their précis. Guide them in editing their language if there are too few or too many words. The goal is to end with the number of words the students set for themselves.

Peer editing - allow students to partner with someone they have not worked with for this reading. Partners are looking for misspelled words or disconnect between ideas to the main idea.

Once students have had two different students peer edit their work *(you may service as one of the editors)*, then the author of the précis writes a final clean copy of the summary.

ELPS (*English Language Proficiency Standard*) 1E, 2H, 3D, 3I, 3J

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.C.3
MATH I.A.1., II.D.1., IV.B.1., VIII.A.1., VIII.A.2., VIII.B.2

Classroom Lesson - continued

Transition to Math

Review percent concepts. Students may work in small groups or with the teacher to solve the percent problems on BLM Percent of Tax and Interest. It is recommended that students continue to perfect their mental math strategies for this lesson. Bar models are perfectly acceptable for those who still need a pictorial model for visualization and organization. Break the numbers into partials to make this strategy easier.

Problem #1 Mental Math Strategy
Need to find 25% of $117.00.
100% = $117
50% = $55 + $3.50 (halves of $110 and $7) = $58.50
25% = $25 + 4.25 (halves of $50 and $7.50) = $29.25

OR…

Need to find 25% of $117.00.
100% = $117
10% = $11.70
5% = $5 + $0.85 (halves of $10 and $1.70) = $5.85
25% = ($11.70 + $11.70) + $5.85 = ($23.40) + $5.85 = $29.25

"What does $29.25 represent?" *(The delivery tax that will be charged for delivering the flower arrangement more than 20 miles.)*

"Are we finished with the problem?" *(No. Need to add the tax to the bill for the flowers.)* $117 + $29.25 = $146.25

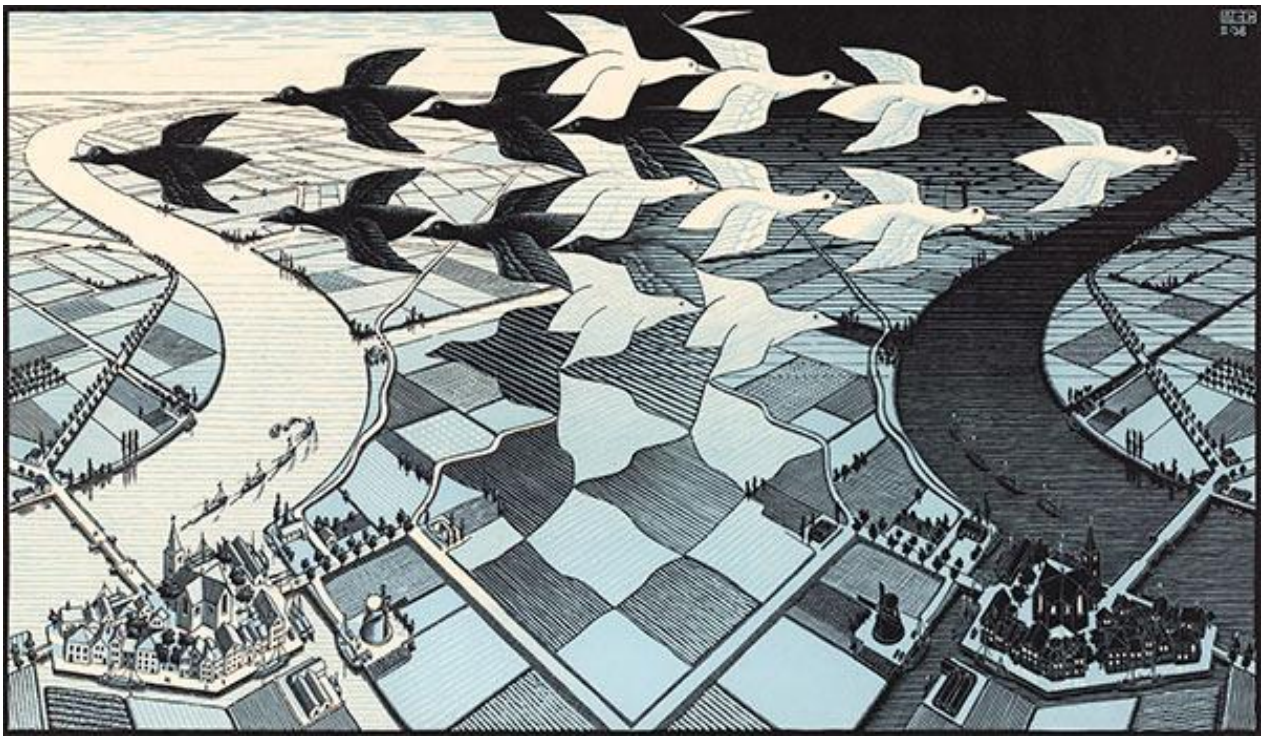
Problem #2 Mental Math Strategy
Need to find 35% of $50.00.
100% = $50
10% = $5
5% = $2.50
35% = ($5 + $5 + $5) + $2.50 = $17.50

OR… This is a little different than the other examples of mental math.

Need to find 35% of $50. I notice quickly that $50 is half of $100, and that all percents are based off of 100.

	Unit 2, Lesson 3 **Grades 5-6** **Classroom Lesson** - continued  I know 35% of $100 = $35, that's easy. But I don't need to know 35% of $100. I only need HALF of that amount ($50). Therefore, I only need HALF of $35. Which is ($15 + $2.50) = $17.50. "What does $17.50 represent?" *(The interest she will charge her brother for borrowing money.)* "Are we finished with the problem?" *(No. Need to add the interest to the amount he borrowed.)* $17.50 + $50 = $67.50 Strip diagrams are provided on the BLM if students need a visual to support their mental math. **Objectives** Read through the math and language objectives, making sure that students understand how they accomplished each.

BLM Day and Night



Unit 2 Lesson 3 – Transition to Math
One per student

Percent of Tax and Interest

Work with a partner to solve the problems on this sheet. Use mental math strategies to find the values, but a bar model is provided should you need a visual.

1. Sunset Flower Shop charges a 25% delivery tax on any flower arrangements that need to be transported farther than 20 miles. If Janice ordered a bouquet of roses and chocolates for $117.00 and wanted it delivered to her granddaughter who lives 34 miles away, how much would her bill be altogether?

2. Petunia decided to start charging her older brother 35% interest on any money he borrowed from her. He asked for $50.00 to go out over the weekend. How much will he have to pay his younger sister back?

Unidad 2 Lección 3 – Transición a las matemáticas
1 por estudiante

Porcentaje de impuestos y de interés

Colabora con un compañero para resolver los problemas de esta hoja. Usa estrategias de matemáticas mentales para encontrar los valores, pero se proporciona un modelo de barra por si necesitas apoyo visual..

1. La Florería Sunset cobra un impuesto de 25% por la entrega de cualquier arreglo floral que necesite ser transportado más de 20 millas. Si Janice ordenó un bouquet de rosas y chocolates de $117.00 y quiere que lo entreguen a su nieta que vive a 34 millas de distancia, ¿cuánto sería su cuenta total?

2. Petunia decidió empezar a cobrarle a su hermano mayor un interés de 35% sobre el dinero que le presta. Él le pidió $50.00 para salir el fin de semana. ¿Cuánto tendrá que pagarle a su hermana menor?

Materials

- picture of *Metamorphosis II* by M.C. Escher (must obtain online – picture is too large to display on a BLM) http://www.mcescher.com/gallery/most-popular/metamorphosis-ii/
- **BLM** Pattern Block Pizazz (3 of 3) Measurement Lab Record Sheet
- **BLM** Hexagonal Tessellations #2
- **BLM** Ratio Predictions

Math Vocabulary

fraction
ratio
percent
tessellation
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary

lithograph
predecessors
tapestries
mural
architecture
linoleum
perspective

ELPS (*English Language Proficiency Standard*) 3C, 3D, 3F, 3G, 4H

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.2., I.E.1., II.C.1.
ELA I.A.2., I.A.3., II.A.4., III.A.1., IV.A.1., IV.B.1.
MATH II.A.2., II.C.1., II.D.1., IV.B.1., VIII.A.3., VIII.A.5.

Teacher Note

The Transition to Math was utilized as a review piece for today. The TV Lesson will start a new concept unrelated to the Transition.

Unit 2, Lesson 3 — Grades 5-6

TV Lesson

Math Objectives:

- Use ratios to describe proportional situations.
- Represent ratios and percents with concrete models, fractions, and decimals.
- Use ratios to make predictions in proportional situations.

Language Objectives:

- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Building Background

See Teacher Note in sidebar.

Display the picture *Metamorphosis II* for students to see either on a projector or as a BLM. *(The copy provided with the lesson handouts is divided into smaller sections to fit on one page. It is recommended, if technology is available, to show this picture in its entirety from the link given.)* Hold a whole group discussion about their mathematical observations of the artwork. Observations may include triangles, hexagons, rhombi, hexagon, etc. Ask them for comparisons between this one, *Metamorphosis I,* and *Verbum.*

Comprehensible Input

Students should be familiar with the tessellation ratios at this point. In Lesson 2 they learned how to set up equivalent ratios and find missing values through number relationships. For this lesson, the TV Teacher will focus on mental math skills using numerical relationships. Fill in the ratio chart on BLM before answering the questions.

Problem #1

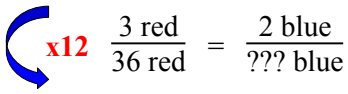
Basic ratio – **1 green: 2 blue: 3 red**
Ratio needed to solve this problem – 2 blue: 3 red
Finding - ??? blue if 36 red are used
red to red relationship – (x12)
Therefore, 2 blue (x12) = 24 blue
Answer – 24 blue: 36 red

The problem was solved using a scale factor if the equations were set up like this:

$$\frac{2 \text{ blue}}{3 \text{ red}} = \frac{??? \text{ blue}}{36 \text{ red}}$$

x12

The problem could also be solved with an invariant relationship if the equations were set up like this:



Problem #2
Basic ratio – **1 green: 2 blue: 3 red**
Ratio needed to solve this problem – 2 blue: 3 red
Finding – 48 blue are used, so ??? red are used.
blue to blue relationship – (x24)
Therefore, 3 red (x24) = 72 red
Answer – 48 blue: 72 red

Teacher Note
Students may set up their equations with several different comparison statements as shown in Problem #1. As long as they keep their labels consistent, the numerical relationships will hold true.

Problem #3
Basic ratio – **1 green: 2 blue: 3 red**
Ratio needed to solve this problem – 1 green: 2 blue
Finding – 6 green are used, so ??? blue are used
green to green relationship – (x6)
Therefore, 2 blue (x6) = 12 blue
Answer – 6 green: 12 blue

Problem #4
Basic ratio – **1 green: 2 blue: 3 red**
Ratio needed to solve this problem – 1 green: 2 blue: 3 red
Finding – 19 green are used, so ??? blue are used, and ??? red are used
green to green relationship – (x19)
Therefore, 2 blue (x19) = 38 blue AND 3 red (x19) = 57 red
Answer – 19 green: 38 blue: 57 red

Teacher Note
All subsequent problems can be set up in an equivalent ratio format as shown in Problem #1.

Problem #5
Basic ratio – **1 green: 2 blue: 3 red**
Ratio needed to solve this problem – 1 green: 2 blue: 3 red
Finding - ??? green are used if 60 blue are used, and ??? red are used
blue to blue relationship – (x30)
Therefore, 1 green (x30) = 30 green AND 3 red (x30) = 90 red
Answer – 30 green: 60 blue: 90 red

Problem #6
Basic ratio – **1 green: 2 blue: 3 red**
Ratio needed to solve this problem – 1 green: 2 blue: 3 red
Finding - ??? green are used if ??? blue are used, and 48 red are used
red to red relationship – (x16)
Therefore, 1 green (x16) = 16 green AND 2 blue (x16) = 32 blue
Answer – 16 green: 32 blue: 48 red

	Unit 2, Lesson 3 **Grades 5-6** **TV Lesson** - continued --- Students may still need to set up equivalent ratios as they did in Lesson 2, but nudge the students who are on the cusp of multiplicative thinking to sharpen their mental math skills. **Pirate's Corner:** Go to MAS Space and tell Captain Portio and the TV Teacher what you learned today during the lesson. Was it easy? Was it hard? **Objectives:** Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 2 Lesson 3 – TV Lesson
One per student

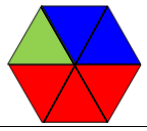
Ratio Predictions

Work with your teacher and peers to fill in the chart below. Use the knowledge and skills you discovered in the Measurement Lab today.

*The tessellation pieces will be viewed as a composition of different colored triangles to keep things simple, as shown in the picture. Tessellation piece = one full hexagon

Basic Triangular Composition Ratio
1 green triangle to 2 blue triangles to 3 red triangles to make 1 tessellation piece

1 green : 2 blue : 3 red



Green Triangles	Blue Triangles	Red Triangles
1	**2**	**3**
2		
	6	
5		**15**
		21
	20	

Use the basic ratio at the top of the page to help fill in the missing values using mental math.

1. _____ **blue: 36 red**

2. **48 blue :** _____ **red**

3. **6 green:** _____ **blue**

4. **19 green:** _____ **blue:** _____ **red**

5. _____ **green: 60 blue:** _____ **red**

6. _____ **green:** _____ **blue: 48 red**

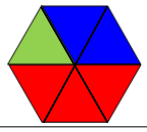
Unit 2 Lesson 3 – TV Lesson
One per student

Predicciones de razones

Trabaja con tu maestro y compañeros para llenar el gráfico abajo. Usa las habilidades y conocimientos que has descubierto en el laboratorio de medición hoy.
*Las partes del mosaico se ven como una composición de diferentes triángulos de colores diferentes para hacerlo mas fácil, como se ve en el dibujo abajo. Parte del mosaico = un hexágono entero

Razón de composición triangular básico
1 triángulo verde a 2 triángulos azules a 3 triángulos rojos para hacer 1 una parte del mosaico

1 verde : 2 azul : 3 rojo



Triángulos verdes	Triángulos azules	Triángulos rojos
1	**2**	**3**
2		
	6	
5		**15**
		21
	20	

Usa la razón basica en la parte superior de esta página para ayudarte con los valores que falta usando la matemática mental.

1. **_____ azul: 36 rojo**
2. **48 azul : _____ rojo**
3. **6 verde: _____ azul**
4. **19 verde: _____ azul: _____ rojo**
5. **_____verde: 60 azul: _____ rojo**
6. **_____ verde: _____ azul: 48 rojo**

Materials
- **BLM** Hexagonal Tessellations #2
- scissors
- glue stick
- copy paper

1 per student
- Family Fun Generic Game Board
- Family Fun Movement Cards
- Unit 2 Family Fun Problem Cards for grades 5-6 (yellow)
- Family Fun Answer Key for Unit 2 (all grade bands)
- Unit 2 Family Fun Special 5th – 6th Game Instructions
- game markers
- **BLM** Recursive Review Problems Lessons 1-3

Math Vocabulary
fraction
ratio
percent
tessellation
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
lithograph
predecessors
tapestries
mural
architecture
linoleum
perspective

ELPS (*English Language Proficiency Standard*) 3C, 3D, 3F, 3G, 4H, 5A, 5B, 5C

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.2., I.E.1., II.C.1.
ELA I.A.2., I.A.3., II.A.4., 5B,
MATH III.A.1., III.A.2.,II.C.2., III.B.1., VII.A.2.

Unit 2, Lesson 3 — Grades 5-6

Follow-up

Math Objectives:
- Use ratios to describe proportional situations.
- Represent ratios and percents with concrete models, fractions, and decimals.
- Use ratios to make predictions in proportional situations.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Practice and Application
Students will assemble their tessellations and then play the Family Fun game. The tessellation today is not as involved as Lesson 2. They simply cut out all 16 tessellation pieces and fit them together with no overlaps and no gaps. No additional cutting is necessary.
Directions:
- cut out all 16 tessellation pieces
- arrange them on the copy paper using rotations if desired *(no gaps, no overlaps)*
- glue finished arrangement to copy paper
- display completed tessellation around room

Recursive Review
- Tank makes 7 free throws out of 11 tries. At this rate how many shots did he take if he made 21?

Writing Topics
Independent Writing Topic
Students will have a daily writing activity which will incorporate the day's focus math vocabulary.

- **Explain how scale factor and constant of proportionality help you determine if ratios are equivalent.**

Objectives
Review the math and language objectives to make sure that they were accomplished and that the students realize how they were accomplished.

Materials
- 1 cup cherry tomatoes
- 1 cup cheese cubes
- 2 half-cup measuring cups
- 2 paper dessert plates
- 2 paper towels

All items listed above per partner pair
- **BLM** Tomatoes and Cheese-Snack Fractions

1 per student
- **BLM** Tomatoes and Cheese-Snack Fractions Teacher Guide

Math Vocabulary
fraction
ratio
percent
tessellation
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
lithograph
predecessors
tapestries
mural
architecture
linoleum
perspective

Unit 2, Lesson 3 — Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents.
- Convert between fractions, decimals, and percents.
- Estimate to find solutions to problems involving fractions, decimals, and percents.

Language Objectives
- Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.

Snack Fractions
Tell students they will use the same process today that they used in the Snack Fraction for Lesson 1 and Lesson 2. Students should have the skills to answer these in small groups. Have the students work through the BLM before sharing the actual snack.

Circulate the room while students are working on the BLM, asking questions as needed to guide, redirect, extend:

QUESTIONS
- What does this fraction mean?
- How did you know how to divide the tomatoes/cheese?
- How did you change your decimal to a percent?

Once the activity is complete, let them enjoy their tomatoes and cheese!

Snack Fraction Journal Writing: BLM Tomatoes and Cheese-Snack Fractions
Explain how $\frac{3}{5} + \frac{2}{5} = 1$ whole.

Objectives: Review the objectives with the class, making sure they understand how they achieved each.

Unit 2 Lesson 3 – Snack Fractions
One per student

Tomatoes and Cheese – Snack Fractions

Divide the snack equally between the two of you. Work with your partner to solve the problems.

1. What fraction represents your portion of tomatoes out of the whole?
   word _____ fraction _____
   decimal _____ percent _____

2. What fraction represents your portion of cheese out of the whole?
   word _____ fraction _____
   decimal _____ percent _____

3. Draw a picture that represents your portion when shared between you and your partner.
   Tomatoes: Cheese:

Now pretend there are five of you sharing the whole snack.

4. What fraction represents your portion of tomatoes out of the whole?
   word _____ fraction _____
   decimal _____ percent _____

5. What fraction represents yours and your partners portion of cheese out of the whole?
   word _____ fraction _____
   decimal _____ percent _____

6. Draw a picture that represents your portion when shared between five people.
   Tomatoes: Cheese:

Unit 2 Lesson 3 – Snack Fractions
One per student

Tomates y queso – Snack Fractions

Divide el refrigerio en porciones iguales entre tu y un compañero. Trabajo con tu compañero para resolver los problemas.

1. ¿Qué fracción representa tu porción de los tomates del entero?

palabra _____ fracción _____
decimal _____ porcentaje _____

2. ¿Qué fracción representa tu porción del queso del entero?
palabra _____ fracción _____
decimal _____ porcentaje _____

3. Haz un dibujo que representa tu porción cuando compartido con un compañero.
Tomates: Queso:

Ahora, imagina que hay cuatro de ustedes compartiendo el refrigerio entero.

4. ¿Qué fracción representa tu porción de los tomates del entero?

palabra _____ fracción _____
decimal _____ porcentaje _____

5. ¿Qué fracción representa tu porción del queso y la de tu compañero del entero?

palabra _____ fracción _____
decimal _____ porcentaje _____

6. Haz un dibujo que representa tu porción cuando compartido con un compañero.
Tomates: Queso:

Unit 2 Lesson 3 – Snack Fractions
One per student

Tomatoes and Cheese – Snack Fractions

Divide the snack equally between the two of you. Work with your partner to solve the problems.

1. What fraction represents your portion of tomatoes out of the whole?

word	one-half	fraction	$\frac{1}{2}$
decimal	0.5	percent	50%

2. What fraction represents your portion of cheese out of the whole?

word	one-half	fraction	$\frac{1}{2}$
decimal	0.5	percent	50%

3. Draw a picture that represents your portion when shared between you and your partner.
   Tomatoes: Cheese:
   pictures will vary depending on size of tomatoes and cheese cubes

---

Now pretend there are 5 of you sharing the whole snack.

4. What fraction represents your portion of tomatoes out of the whole?

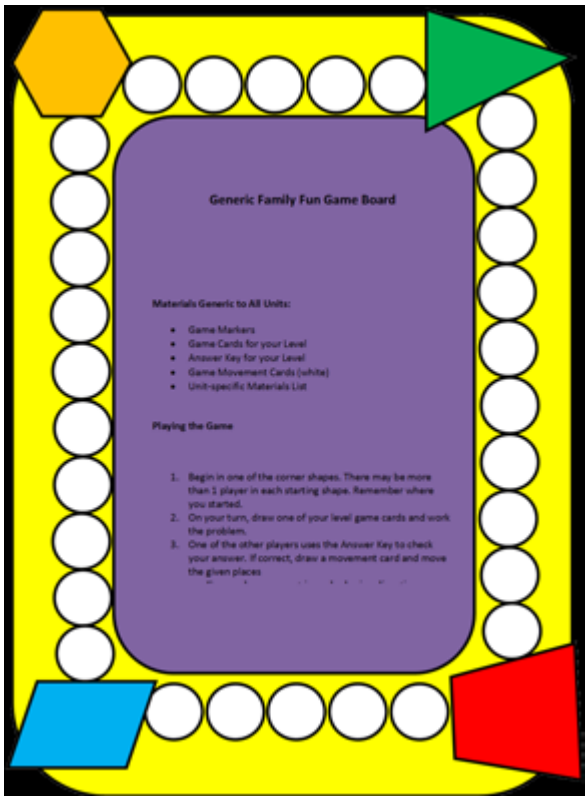
word	one-fifth	fraction	$\frac{1}{5}$
decimal	0.2	percent	20%

5. What fraction represents yours and your partners portion of cheese out of the whole?

word	two-fifths	fraction	$\frac{2}{5}$
decimal	0.4	percent	40%

6. Draw a picture that represents your portion when shared between 5 people.
   Tomatoes: Cheese:
   pictures will vary depending on size of tomatoes and cheese cubes

Unit 2 Lesson 3 – Family Fun



Dear _____,

I brought home the Family Fun game again!

Here are some strategies I'll need to solve the problems in this unit's game …

_____
_____
_____
_____
_____
_____

Sincerely,

_____

Unit 2 Lesson 3 – Family Fun

Querido _____,

¡Otra vez traje un juego a clase!

Estas con algunas de las estrategias que voy a necesitar para resolver problemas del juego.

_____
_____
_____
_____
_____
_____

Atentamente,

_____

This portion of the curriculum is NOT required, but should be used to supplement and enrich the Unit's activities.	**Enrichment Suggestions** **5-6**  Unit 2 Biography and Artwork by M.C. Escher **Math Walk** Take a walk around the school and find as many tessellations as you can that occur in the building (tiles, artwork, etc.). **Technology Connection** http://www.teachertube.com/viewVideo.php?video_id=129544 TeacherTube video showing students how to create more tessellations. **More Curriculum Connection Ideas off the Web** • **Social Studies:** http://edtech2.boisestate.edu/meganhoopesmyers/502/virtualtour/history.html History of Tessellations in the World • **Science**: http://science.howstuffworks.com/tessellations.htm How Stuff Works • **Art:** Create a tessellation that doesn't stem from a hexagon. Use a square, rectangle, triangle, etc…

Units 2 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

*Print on **yellow** paper.*

Family Fun – Problem Cards (1 of 2)

A. The water in the lake dried up by 12.75 ft. It rained all week and filled it back up by $6\frac{3}{4}$ feet. Where is the water level now?	**B**. A recipe calls for 3.25 cups of flour and $2\frac{1}{2}$ cups of sugar. How many cups of dry ingredients would that be altogether?	**C**. Jewel marked off 15.6 meters by 8.4 meters in the back yard for her new greenhouse. What will be the perimeter for the new greenhouse?
D. Marcus had to travel 3126.46 miles to get to his university. He already traveled 365.7 on the first day. How many miles does he have left?	**E**. Terrance had $259.65 in his bank account. After buying a gift for his girlfriend, he had $186.43. How much was her gift?	**F**. Jenny drank 16.9 oz. of water at breakfast, 32.5 oz. at lunch, and 22.3 at dinner. What was her total water intake for the day?
G. There was a 12.5% tax on the custom violin repairs. If Pedro's repair was quoted at $40, what would his bill be after tax?	**H**. Chastity charged a 10% service tax on alterations. How much would the total bill be if an alteration cost $26.70?	**I**. Ernie deposited $5000 into a savings account for his daughter. It would earn 15% interest in one year if untouched. How much did he earn that year?

Diversión familiar – Cartas de problemas (1 de 2)

A. El agua en el lago se secó 12.75 ft. Llovió toda la semana y el nivel volvió a elevarse $6\frac{3}{4}$ pies. ¿Dónde está el nivel de agua ahora?	**B**. Una receta pide 3.25 tazas de harina y $2\frac{1}{2}$ tazas de azúcar. ¿Cuántas tazas de ingredientes secos serían en total?	**C**. Jewel señaló un área de 15.6 metros por 8.4 metros en el patio trasero para su nuevo invernadero. ¿Cuál será el perímetro del nuevo invernadero?
D. Marcus tuvo que viajar 3126.46 millas para llegar a su universidad. Él ya viajó 365.7 millas en el primer día. ¿Cuántas millas le faltan para llegar?	**E**. Terrance tenía $259.65 en su cuenta bancaria. Después de comprar un regalo para su novia, tenía $186.43. ¿Cuánto costó el regalo?	**F**. Jenny bebió 16.9 onzas de agua en el desayuno, 32.5 onzas en el almuerzo y 22.3 onzas en la cena. ¿Cuánta agua bebió en total durante el día?
G. Las reparaciones a un violín incluyeron un impuesto del 12.5%. Si las reparaciones para Pedro se cotizaron en $40, ¿cuál sería su cuenta después de impuestos?	**H**. Chasity cobró un impuesto por servicio del 10% sobre modificaciones. ¿Cuánto sería el total de una cuenta si una modificación costó $26.70?	**I**. Ernie depositó $5000 en una cuenta de ahorros para su hija. Ganaría 15% de interés en un año si no se toca. ¿Cuánto ganó en ese año?

Units 2 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

*Print on **yellow** paper.*

Family Fun – Problem Cards (2 of 2)

J.
Jonah's credit card charged him 25% interest each month on purchases. If he charged $440, what is his total balance?

K.
Demarcus left a 20% tip on his food bill of $56.20. What did he pay for dinner altogether?

L.
What would be a 15% tip on a check that was $84.00?

M. Determine if this statement is true.

$$\frac{5 \text{ gold}}{6 \text{ silver}} = \frac{30 \text{ silver}}{25 \text{ gold}}$$

N. Determine if this statement is true.

$$\frac{16 \text{ balloons}}{2 \text{ clowns}} = \frac{4 \text{ balloons}}{1 \text{ clown}}$$

O. Based on the ratio given, determine how many cupcakes fit in one box.

24 cupcakes : 6 boxes

P.
Phil hit the target 16 out of every 20 times he shot his bow. Based on this ratio, how many times would he hit the target if he shot 30 times?

Q.

$$\frac{3}{5} + \frac{2}{4} = ???$$

R.

$$1\frac{4}{6} - \frac{1}{3} = ???$$

J.
La tarjeta de crédito de Jonah le cobró un 25% de interés cada mes sobre sus compras. Si él compró $440, ¿cuál es su saldo total?

K.
Demarcus dejó una propina de 20% en su cuenta de restaurante de $56.20. ¿Cuánto pagó en total por la cena?

L.
¿Cuánto sería una propina del 15% en una cuenta de $84.00?

M. Determina si esta afirmación es correcta.

$$\frac{5 \text{ gold}}{6 \text{ silver}} = \frac{30 \text{ silver}}{25 \text{ gold}}$$

N. Determina si esta afirmación es correcta.

$$\frac{16 \text{ balloons}}{2 \text{ clowns}} = \frac{4 \text{ balloons}}{1 \text{ clown}}$$

O. En base a la relación dada, determina cuántos pastelillos caben en una caja.

24 pastelillos: 6 cajas

P.
Phil le dio al blanco 16 de cada 20 veces que disparó su arco. En base a esta tasa, ¿cuántas veces daría en el blanco si disparara 30 veces?

Q.

$$\frac{3}{5} + \frac{2}{4} = ???$$

R.

$$1\frac{4}{6} - \frac{1}{3} = ???$$

Units 2 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

Special 5th – 6th Game Instructions

Materials:

- Family Fun Generic Game Board
- Family Fun Movement Cards
- Unit 2 Family Fun Problem Cards for grades 5-6 (yellow)
- Family Fun Answer Key for Unit 2 (all grade bands)
- Unit 2 Family Fun Special 5th – 6th Game Instructions

Solution Expectations

Problems A – B
This problem set is asking students to convert between decimals and/or fractions to solve. They can choose whichever one they are more comfortable with.

Problems C – F
This problem set covers the addition and subtraction of decimals. Students shouldn't have a tough time solving these. The main concern is to make sure place value spots are lined up correctly. Some students line up the decimals, which lines up place value.

Problems G – L
This problem set deals with percents (tax, interest, and tip). All are solved in the same fashion. Students are encouraged to find 10% and work from there.

Problems M – P
This problem set covers equivalent ratios. Students are asked to determine if ratios are equivalent/proportional, and to make predictions based off of ratios.

Problems Q – R
This problem set covers adding and subtracting with unlike denominators. Students must first find a common denominator. They may use the multiplication chart provided to them in Lesson 1.

Unidad 2, Lección 3 – DIVERSIÓN FAMILIAR

1 por estudiante por hogar
1 por pareja de compañeros en el salón

Instrucciones especiales de juego para 5º – 6º

Materiales:

- Tablero de juego genérico de Diversión Familiar
- Cartas de movimiento de Diversión Familiar
- Cartas de problemas de Diversión Familiar de la Unidad 2 para grados 5-6 (amarillo)
- Guía de respuestas de Diversión Familiar para la Unidad 2 (todos los grados)
- Instrucciones especiales de juego de la Unidad 2 de Diversión Familiar para 5º – 6º

Expectativas de solución

Problemas A – C

Este conjunto de problemas pide a los estudiantes que conviertan entre decimales y/o fracciones para resolverlos. Ellos pueden decidir con cuáles se sienten más cómodos.

Problemas C – F

Este conjunto de problemas cubre la suma y resta de decimales. Los estudiantes no deben tener problemas para resolverlos. La principal preocupación es asegurarse de que los espacios de magnitudes estén alineados correctamente. Algunos estudiantes alinean los puntos decimales, con lo que alinean los espacios de magnitud.

Problemas G – L

Este conjunto de problemas utiliza porcentajes (impuestos, interés y propinas). Todos se resuelven del mismo modo. Se anima a los estudiantes a encontrar el 10% y continuar desde ahí.

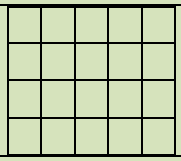
Problemas M – P

Este conjunto de problemas utiliza relaciones equivalentes. Se pide a los estudiantes que determinen si las relaciones son equivalente/proporcionales, y que hagan predicciones basados en las relaciones.

Problemas Q – R

Este conjunto de problemas cubre sumas y restas con denominadores diferentes. Los estudiantes primero deben encontrar un común denominador. Pueden usar la tabla de multiplicar que se les proporciona.

BLM All-School Unit 2, Lesson 3 **Family Fun Game Answer Key**

Problem Letter	Kinder	1-2	3-4	5-6	7-8
A	8 sounds	See Special instructions	7x5=35 5x7=35 35÷7=5 35÷5=7	6 feet	4.78 cm
B	9 dances	See Special instructions	7x6=42 6x7=42 42÷6=7 42÷7=6	5.75 cups dry (or fraction)	550 cm
C	2 people	See Special instructions		48 meters	6 minutes
D	6 people	1 and 9	18 cookies	2760.76 miles	448 miles
E	5 sounds	7 and 3	6 cookies	$73.22	$13.00
F	4 sounds	8 and 2	8 boxes	71.7 oz	21 lbs of apples
G	Top train is longer	1 child	3 sets of 2 counters	$45	588 miles
H	Top train is shorter	29 children	6 sets of 2 counters	$29.37	20 lbs of potatoes
I	3 cubes are fewer than 5	10 cents	Most common would be 2/8, but any equivalent will do.	$750	36 oz of chocolate
J	Nickel	13	3.09	$550	24 oz toffee
K	Dime	9	7.25	$67.44	15 baskets
L	Quarter	14	4 7/10	$12.60	4:5 = 8:10
M	penny	6 cookies	0.9	no. ratios are not set up consistently	$105.00
N	2 pennies	3 miles	0.7	no. scale factor and constant of proportionality not present	9 shirts
O	8 pennies	10 pennies	2.5 > 2.05	4 cupcakes	$5.00
P	2 parts the same size	3 pots	on the middle line	24 hit target	25 oranges
Q	1 parts not the same size	14 pounds	0.9	$\frac{11}{10}$ or an equivalent of	1 hr 30 minutes
R	count to make sure there are 12 counters and use the number 12	1 group of 6 1 groups of 4	Closest line to 1.	$1\frac{1}{3}$	10.5 miles

Generic Family Fun Game Board

Materials Generic to All Units:

- Game Markers
- Game Cards for your Level
- Answer Key for your Level
- Game Movement Cards (white)
- Unit-specific Materials List

Playing the Game

1. Begin in one of the corner shapes. There may be more than one player in each starting shape. Remember where you started.
2. On your turn, draw one of your level game cards and work the problem.
3. One of the other players uses the Answer Key to check your answer. If correct, draw a movement card and move the given places
   - Forward movement in a clockwise direction.
   - Back movement in a counter clockwise direction.

   If incorrect, do not move.
4. Game is over when the first person runs the entire track, ending back on the starting shape.

Tablero de juego

Materiales genéricos para todas las unidades:

- Fichas para jugar
- Tarjetas del juego para su nivel
- Clave de respuestas para su nivel
- Tarjetas de movimiento del juego (blancas)
- Lista de materiales específicos de la unidad

Cómo se juega

1. Empiece en una de las esquinas. Puede haber más de
1 jugador en cada figura de inicio.
2. Cuando sea su turno, saque una de las tarjetas de
juego de su nivel y resuelva el problema.
3. Uno de los otros jugadores usa la clave de respuestas
para ver si su respuesta es correcta. Si es correcta, saque una tarjeta de movimiento y mueva su ficha como lo indica la tarjeta.
   - Movimiento hacia adelante en el sentido de las manecillas del reloj.
   - Movimiento hacia atrás en el sentido contrario a las manecillas del reloj.

   Si es incorrecta, no se mueve.
4. El juego se acaba cuando la primera persona recorre
toda la pista y termina en la figura de inicio.

BLM [redacted] **Follow-up Lesson 3 Family Fun Game Movement Cards**

Printed in White – 1 set for the TV Lesson Demo. 1 set per partners for class; 1 set per student for home.

Move forward 1 space	**Move forward 1 space**	**Move forward 1 space**
Move forward 1 space	**Move forward 1 space**	**Move forward 1 space**
Move forward 2 spaces	**Move forward 2 spaces**	**Move forward 2 spaces**
Move back 1 space	**Move back 1 space**	**Move back 1 space**
Move forward 3 spaces	**Move forward 2 spaces**	**Move forward 3 spaces**

Units 1 – 2 – 3 -- FAMILY FUN

One per student for home
One per partner pair in class

*Print on **white** paper.*

Family Fun – Movement Cards

Avanza un espacio	**Avanza un espacio**	**Avanza un espacio**
Avanza un espacio	**Avanza un espacio**	**Avanza un espacio**
Avanza 2 espacios	**Avanza 2 espacios**	**Avanza 2 espacios**
Retrocede 1 espacio	**Retrocede 1 espacio**	**Retrocede 1 espacio**
Avanza 3 espacios	**Avanza 3 espacios**	**Avanza 3 espacios**

Unit 2 – Biography and Artwork by M.C. Escher

Math Matters 2014 – In-Home Instruction

Math Objectives

TV Lesson 1

- Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.

TV Lesson 3

- Use ratios to describe proportional situations.
- Represent ratios and percents with concrete models, fractions, and decimals.
- Use ratios to make predictions in proportional situations.

Differentiate

TV Lesson 1 – students practice addition and subtraction of fractions with unlike denominators.

TV Lesson 3 – students practice different strategies for finding equivalent ratios using tessellation pieces.

Snack Fraction Notice

All snack fractions are common throughout the grade bands. All grade bands have daily snack fraction activities provided. All snack fractions for a unit in a specific grade band will practice the same set of skills. Therefore, you may choose from any of the three activities. Lesson 2, Crackers and Nutella is the simplest snack to transport.

Materials

TV Lesson 1

- picture of *Verbum,* by M.C. Escher
- **BLM** Pattern Block Pizazz (1 of 3)-Measurement Lab Record Sheet
- **BLM** Fraction Frenzy
- pattern blocks (hexagons, trapezoids, rhombi, triangles)
- black, red, blue, and green markers

TV Lesson 3

- picture of *Metamorphosis II* by M.C. Escher (must obtain online – picture is too large to display on a BLM) http://www.mcescher.com/gallery/most-popular/metamorphosis-ii/
- **BLM** Pattern Block Pizazz (3 of 3)-Measurement Lab Record Sheet
- **BLM** Hexagonal Tessellations #2
- **BLM** Ratio Predictions

Family Fun

- Family Fun Generic Game Board
- Family Fun Movement cards
- Unit 2 Family Fun-Problem Cards
- Family Fun Answer Key from Unit 2 (all grade bands)
- Unit 2 Family Fun Special 5^{th} – 6^{th} Game Instructions
- game markers

Snack Fractions (Lesson 2**)**

- 2 paper dessert plates
- 2 paper towels
- 1 plastic knife
- 2 pieces wax paper
- 2 pair of scissors
- 2 cups trail mix (pre-packaged or home-made)

Allergy Warning – please substitute a nut-free mix for the entire class if nut allergies are present.

All items listed above per partner pair

- **BLM** Trail Mix-Snack Fractions
- **BLM** Trail Mix-Snack Fractions Teacher Guide

Unit 2 – Biography and Artwork by M.C. Escher

Math Matters 2014 – In-Home Instruction

QUESTIONING
As a result of this lesson, your students should be able to respond to the following:

- Explain your strategy to me.
- How can a bar model help you find percents?
- How can you prove two ratios are equivalent?
- Why must you find a common denominator when adding and subtracting fractions?
- How are fractions and ratios different? Similar?

Math Vocabulary
fraction, ratio, percent, tessellation, scale factor (covariant), constant of proportionality (invariant)

CGI

- Lesson 1 – Lesson 1 - Part-Part-Whole, Part Unknown (5th grade Assessment Item 4)
- Lesson 2 – Rate, Partitive Division (6th grade Assessment Item 6)
- Lesson 3 – Compare, Referent Unknown (5th grade Assessment Item 5)

Journal Writing
Explain how scale factor and constant of proportionality help you determine if ratios are equivalent.

Family Fun
A generic game board is being used in all grade levels, differentiated by game cards specific to the grade level.

Snack Fractions
Students divide their snack into halves and fifths and calculate fractions, equivalent decimals, and percents.

Assessment
As a result of experiencing the activities in this unit, students will be introduced to and practice skills for items:
5^{th} – all items
6^{th} – all items

Unit 2 – Biography and Artwork by M.C. Escher

Math Matters 2014 – In-Home Instruction

Math Objectives

TV Lesson 1

- Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.

TV Lesson 3

- Use ratios to describe proportional situations.
- Represent ratios and percents with concrete models, fractions, and decimals.
- Use ratios to make predictions in proportional situations.

Differentiate

TV Lesson 1 – students practice addition and subtraction of fractions with unlike denominators.

TV Lesson 3 – students practice different strategies for finding equivalent ratios using tessellation pieces.

Snack Fraction Notice

All snack fractions are common throughout the grade bands. All grade bands have daily snack fraction activities provided. All snack fractions for a unit in a specific grade band will practice the same set of skills. Therefore, you may choose from any of the three activities. Lesson 2, Crackers and Nutella is the simplest snack to transport.

Materials

TV Lesson 1

- picture of *Verbum,* by M.C. Escher
- **BLM** Pattern Block Pizazz (1 of 3)-Measurement Lab Record Sheet
- **BLM** Fraction Frenzy
- pattern blocks (hexagons, trapezoids, rhombi, triangles)
- black, red, blue, and green markers

TV Lesson 3

- picture of *Metamorphosis II* by M.C. Escher (must obtain online – picture is too large to display on a BLM) http://www.mcescher.com/gallery/most-popular/metamorphosis-ii/
- **BLM** Pattern Block Pizazz (3 of 3)-Measurement Lab Record Sheet
- **BLM** Hexagonal Tessellations #2
- **BLM** Ratio Predictions

Family Fun

- Family Fun Generic Game Board
- Family Fun Movement cards
- Unit 2 Family Fun-Problem Cards
- Family Fun Answer Key from Unit 2 (all grade bands)
- Unit 2 Family Fun Special 5th – 6th Game Instructions
- game markers

Snack Fractions (Lesson 2)

- 2 paper dessert plates
- 2 paper towels
- 1 plastic knife
- 2 pieces wax paper
- 2 pair of scissors
- 2 cups trail mix (pre-packaged or home-made)

Allergy Warning – please substitute a nut-free mix for the entire class if nut allergies are present.

All items listed above per partner pair

- **BLM** Trail Mix-Snack Fractions
- **BLM** Trail Mix-Snack Fractions Teacher Guide

Unit 2 – Biography and Artwork by M.C. Escher

Math Matters 2014 – In-Home Instruction

QUESTIONING
As a result of this lesson, your students should be able to respond to the following:

- Explain your strategy to me.
- How can a bar model help you find percents?
- How can you prove two ratios are equivalent?
- Why must you find a common denominator when adding and subtracting fractions?
- How are fractions and ratios different? Similar?

Math Vocabulary
fraction, ratio, percent, tessellation, scale factor (covariant), constant of proportionality (invariant)

CGI

- Lesson 1 – Lesson 1 - Part-Part-Whole, Part Unknown (5th grade Assessment Item 4)
- Lesson 2 – Rate, Partitive Division (6th grade Assessment Item 6)
- Lesson 3 – Compare, Referent Unknown (5th grade Assessment Item 5)

Journal Writing
Explain how scale factor and constant of proportionality help you determine if ratios are equivalent.

Family Fun
A generic game board is being used in all grade levels, differentiated by game cards specific to the grade level.

Snack Fractions
Students divide their snack into halves and fifths and calculate fractions, equivalent decimals, and percents.

Assessment
As a result of experiencing the activities in this unit, students will be introduced to and practice skills for items:
5^{th} – all items
6^{th} – all items

Grades 5-6 Overview

Unit 3, Lesson 1 *Call it Courage* by Armstrong Sperry

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine 30 – 45 mins	• Solve problems using a measurement tool and calculating measurements. • Model and solve multistep word problems. • Solve problems involving fractions, ratios, and proportions. • Solve for a variable. • Compose and decompose numbers.	• Speak to partners, teacher, and class using vocabulary. • Discuss problem solving process and strategies.	**Essential:** • Measurement Lab • Solve It! Problems • Fraction Action • *X* Marks the Spot • CGI **Optional:** • Target Number 25 • Money Matters		• **BLM** Outrigger Canoe Conversion-Measurement Lab Record Sheet • **BLM** Outrigger Canoe Conversion-Measurement Lab Record Sheet Teacher Guide • **BLM** Solve It! Problems 1-2 • **BLM** Fraction Action and *X* Marks the Spot • **BLM** Lessons 1-3 CGI *Call it Courage*
Classroom Lesson 1 hr – 1.5 hrs	• Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models. • Represent ratios and percents with concrete models, fractions, and decimals.	Determine or clarify the meaning of unfamiliar or multiple meaning words using context clues. Describe events that advance the story, explaining how each event foreshadows future events. Make inferences and draw conclusions about the structure and elements of fiction and provide evidence from text to support understanding.	**Literature Selection** ***Call it Courage*** by Armstrong Sperry **Transition to Math** Students review percent concepts involving tips using strip diagrams, proportions, and mental math strategies.		

TV Lesson 30 mins	• Use ratios to describe proportional situations. • Use ratios to make predictions in proportional situations.	• Discuss problem solving strategies with peers. • Write out solutions for solving problems. • Justify their thinking and strategies.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Students explore and practice a variety of proportional setups.		• **BLM** Mafatu's Fruit
Follow-up Lesson 30 mins – 1 hour *(including Snack Fractions)*	• Use ratios to describe proportional situations. • Use ratios to make predictions in proportional situations.	• Discuss problem solving strategies with peers. • Write out solutions for solving problems. • Justify their thinking and strategies.	**Practice and Application** Students play the game Ridiculous Ratios to practice solving for an unknown in proportional situations.	• set of dominoes • scratch paper • 12x12 multiplication chart (optional) *All items listed above per partner pair.*	• **BLM** Ridiculous Ratios Game Directions • **BLM** Ridiculous Ratios Record Sheet
Snack Fractions	• Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents. • Convert between fractions, decimals, and percents. • Estimate to find solutions to problems involving fractions, decimals, and percents.	• Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.	Students will work in pairs and explore fraction and decimal concepts through fair-sharing a dill pickle.	• 1 large dill pickle • 1 plastic knife • 3 paper dessert plates • 3 paper towels *All items above per group of 3*	• **BLM** Dill Pickle-Snack Fractions • **BLM** Dill Pickle-Snack Fractions Teacher Guide

Grades 5-6 Overview

Unit 3, Lesson 2 *Call it Courage* by Armstrong Sperry

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine 30 – 45 mins	• Solve problems using a measurement tool and calculating measurements. • Model and solve multistep word problems. • Solve problems involving fractions, ratios, and proportions. • Solve for a variable. • Compose and decompose numbers.	• Speak to partners, teacher, and class using vocabulary. • Discuss problem solving process and strategies.	**Essential:** • Measurement Lab • Solve It! Problems • Fraction Action • *X* Marks the Spot • CGI **Optional:** • Target Number 50 • Money Matters		• **BLM** Moai Height Conversion-Measurement Lab Record Sheet • **BLM** Moai Height Conversion-Measurement Lab Record Sheet Teacher Guide • **BLM** Solve It! Problems 3 • **BLM** Fraction Action and *X* Marks the Spot • **BLM** Lessons 1-3 CGI *Call it Courage*
Classroom Lesson 1 hr – 1.5 hrs	• Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models. • Represent ratios and percents with concrete models, fractions, and decimals.	• Determine or clarify the meaning of unfamiliar or multiple meaning words using context clues. • Describe events that advance the story, explaining how each event foreshadows future events. • Make inferences and draw conclusions about the structure and elements of fiction and provide evidence from text to support understanding.	**Literature Selection** ***Call it Courage*** by Armstrong Sperry **Transition to Math** Students review percent concepts involving interest using strip diagrams, proportions, and mental math strategies.	• Small Sticky notes • Two sheets of lined notebook paper per student • 1 index card per student • 1- 11x17 in paper per student for illustrations	• **BLM** Vocabulary Cards • **BLM** Vocabulary Illustration (teacher)

TV Lesson 30 mins	• Use ratios to describe proportional situations. • Represent ratios and percents with concrete models, fractions, and decimals. • Use ratios to make predictions in proportional situations.	• Discuss problem solving strategies with peers. • Write out solutions for solving problems. • Justify their thinking and strategies.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Students continue working with proportional situations but apply the multiplicative strategy of thinking in "groups of" to generate a covariant or invariant relationship.		• **BLM** Bamboo Fish Trap
Follow-up Lesson 30 mins – 1 hour *(including Snack Fractions)*	• Use ratios to describe proportional situations. • Use ratios to make predictions in proportional situations.	• Discuss problem solving strategies with peers. • Write out solutions for solving problems. • Justify their thinking and strategies.	**Practice and Application** Students play the game Ridiculous Ratios to practice solving for an unknown in proportional situations. Applying the "groups of" strategy earns them more points.	• set of dominoes • scratch paper • 12x12 multiplication chart (optional) *All items listed above per partner pair.*	• **BLM** Ridiculous Ratios Game Directions (Lesson 1) • **BLM** Ridiculous Ratios Record Sheet (Lesson 1)
Snack Fractions	• Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents. • Convert between fractions, decimals, and percents. • Estimate to find solutions to problems involving fractions, decimals, and percents.	• Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.	Students will work in pairs and explore fraction and decimal concepts through fair-sharing a dill pickle.	• 3 paper dessert plates • 3 paper towels • 6 pieces of beef jerky *All items above per group of 3*	• **BLM** Beef Jerky-Snack Fractions • **BLM** Beef Jerky-Snack Fractions Teacher Guide

Grades 5-6 Overview

Unit 3, Lesson 3 *Call it Courage* by Armstrong Sperry

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine 30 – 45 mins	• Solve problems using a measurement tool and calculating measurements. • Model and solve multistep word problems. • Solve problems involving fractions, ratios, and proportions. • Solve for a variable. • Compose and decompose numbers.	• Speak to partners, teacher, and class using vocabulary. • Discuss problem solving process and strategies.	**Essential:** • Measurement Lab • Solve It! Problems • Fraction Action • *X* Marks the Spot • CGI **Optional:** • Target Number 75 • Money Matters		• **BLM** Moai Weight Conversion-Measurement Lab Record Sheet • **BLM** Moai Weight Conversion-Measurement Lab Record Sheet Teacher Guide • **BLM** Solve It! Problems 4 • **BLM** Fraction Action and *X* Marks the Spot • **BLM** Lessons 1-3 CGI *Call it Courage*
Classroom Lesson 1 hr – 1.5 hrs	• Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models. • Represent ratios and percents with concrete models, fractions, and decimals.	**Language Objectives:** • Determine or clarify the meaning of unfamiliar or multiple meaning words using context clues. • Describe events that advance the story, explaining how each event foreshadows future events. • Make inferences and draw conclusions about the structure and elements of fiction and provide evidence from text to support understanding.	**Literature Selection** ***Call it Courage*** by Armstrong Sperry **Transition to Math** Students continue practicing mental math strategies in percent situations.	• Small sticky notes	• **BLM** Vocabulary Chart 1 for each student • **BLM** Plot Elements

TV Lesson 30 mins	• Use ratios to describe proportional situations. • Represent ratios and percents with concrete models, fractions, and decimals. • Use ratios to make predictions in proportional situations.	• Discuss problem solving strategies with peers. • Write out solutions for solving problems. • Justify their thinking and strategies.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Students explore the strategy of simplifying the known ratio in order to easily find a multiplicative relationship.		• **BLM** Tahitian Sharks
Follow-up Lesson 30 mins – 1 hour *(including Snack Fractions)*	• Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations. • Use addition and subtraction to solve problems involving whole numbers and decimals. • Add and subtract positive rational numbers fluently. • Use ratios to describe proportional situations. • Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models.	• Discuss problem solving strategies with peers. • Write out solutions for solving problems. • Justify their thinking and strategies.	**Practice and Application** Students learn and play the Family Fun Game.	• Family Fun Generic Game Board • Family Fun Movement Cards • Unit 3 Family Fun Problem Cards for grades 5-6 (yellow) • Family Fun Answer Key for Unit 3 (all grade bands) • Unit 3 Family Fun Special 5^{th} – 6^{th} Game Instructions • game markers	• **BLM** Recursive Review Problems Lessons 1-3

	• Represent ratios and percents with concrete models, fractions, and decimals. • Use ratios to make predictions in proportional situations.				
Snack Fractions	• Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents. • Convert between fractions, decimals, and percents. • Estimate to find solutions to problems involving fractions, decimals, and percents.	• Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.	Students will work in groups of 3 and explore fraction and decimal concepts through fair-sharing raisin bread and bananas. (circular models)	• 1 slice of raisin bread (cut into a circle) • 1 banana • 3 paper dessert plates • 3 paper towels *All items above per group of 3*	• **BLM** Raisin Bread and Banana-Snack Fractions 1 per student • **BLM** Raisin Bread and Banana-Snack Fractions Teacher Guide

Project SMART/Math MATTERS 2014

Grade Level: 5-6	Unit 3 / Lessons 1 – 2 – 3

Daily Routine Math Objectives:
Solve problems using a measurement tool and calculating measurements.
Model and solve multistep word problems.
Solve problems involving fractions, ratios, and proportions.
Solve for a variable.
Compose and decompose numbers.

Daily Routine Language Objectives:
Speak to partners, teacher, and class using vocabulary.
Discuss problem solving process and strategies.

Unit Math Objectives:
Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.
Use addition and subtraction to solve problems involving whole numbers and decimals.
Add and subtract positive rational numbers fluently.
Use ratios to describe proportional situations.
Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models.
Represent ratios and percents with concrete models, fractions, and decimals.
Use ratios to make predictions in proportional situations.

Unit Language Objectives:
Determine or clarify the meaning of unfamiliar or multiple meaning words using context clues.
Describe events that advance the story, explaining how each event foreshadows future events.
Make inferences and draw conclusions about the structure and elements of fiction and provide evidence from text to support understanding.

Technology Objectives:
Use research skills and electronic communication, with appropriate supervision, to create new knowledge.

Vocabulary
Math: fraction, ratio, percent, scale factor, constant of proportionality
Language: millrace, trough, cauterize, perilous, reverberated, impetus

Resources/Literacy Links
Call it Courage by Armstrong Sperry

Related Links: **http://www.ogram.org/sperry/graphics/images/frenchpolynesia.jpg**

Lesson Sequence
- Daily Routine: 30 – 45 minutes
- Classroom Lesson: 1 hour – 1.5 hours
- Math Lesson: 30 minutes
- Follow-up including Snack Fractions: 30 minutes - 1 hour

This portion of the curriculum is NOT required, but should be used to supplement and enrich the Unit's activities.

Torn Construction Paper Art Project

Enrichment Suggestions 5-6

Unit 3 ***Call It Courage***

Math Walk
Take a walk around the school and find objects that are about the same height as some of the tallest Moai (up to 72 ft.) and about the same weight as some of the heaviest Moai (140 - 270 tons).

Technology Connection
http://youtu.be/YpNuh-J5IgE
YouTube video showing how the Moai "walked."

More Curriculum Connection Ideas off the Web

- **Social Studies:** http://travel.nationalgeographic.com/travel/world-heritage/easter-island/
  History of the Moai of Easter Island
- **Science**:
  http://news.nationalgeographic.com/news/2012/06/120622-easter-island-statues-moved-hunt-lipo-science-rocked/
  How science predicts the Moai were moved.
  http://adventure.howstuffworks.com/easter-island3.htm
  How Stuff Works – How Easter Island Works
- **Art:**
  http://www.firstpalette.com/Craft_themes/People/moaistatues/moaistatues.html
  Create a Moai statue out of sand.
  http://www.youtube.com/watch?v=bdYRg2tEuyg
  Build a Moai statue out of paper.
  Mold a Moai statue out of clay.
  Create your favorite scene from the story using torn construction paper and a glue stick. *(similar to the picture shown)*

Unit 3 OPTIONAL All-School Project

Because all grade bands will be reading, learning and researching within the same unit theme, we are offering OPTIONAL projects in which all ages can participate.

Unit Theme: Adventure

Unit 1: Adventure Trip

Defined:
Students take an Adventure Trip to someplace in your area. This can be a real field trip, or can be a virtual trip. Notes and photographs are taken of areas that most interest the students. When the school "returns" from the trip, students chronicle their adventure by either creating a scrapbook per class that is collated into one large book, or creating an online scrapbook

Materials:

- Spiral notebooks for each student
- Pencils or pens
- Teacher (or student) cameras, phones, or other ways to take photographs
- Large scrapbook or virtual scrapbook online where students can chronicle their adventure
- Other materials as indicated by your chosen trip.

Objectives: (add your own objectives to the project)

- Students observe their surroundings and select memorable images to share.
- Students chronicle the adventure with times and events of the day.
- Students write brief descriptions of the memorable images.

Procedures:

1. Teachers select 1 field trip or virtual trip for the school to visit
2. Prepare students for the trip. This will require you and older students to research the destination to find what you want to learn about when you arrive there, and how the trip will be an adventure.
3. Visit the site, whether real time or virtual, each student looking for the keys you've decided upon in your preparation of the trip. Students take notes and pictures (younger students might need a recorder to make their on-going commentaries)
4. Return from the trip and generate a scrapbook, either real or online, to chronicle the adventure
5. Share the scrapbook at a family function. It would be well if each student could keep a copy of the scrapbook for a remembrance.

Online Resources:

- http://www.scholastic.com/teachers/article/virtual-field-trips Great Virtual Field Trips from Instructor *– a must read* for every teacher whether you go virtual or real trip.
- http://www.smilebox.com/scrapbooks/online-scrapbooks.html free online scrapbook templates
- http://mashable.com/2008/09/16/online-scrapbooking/ How to – would suggest teachers perusing this site first.
- http://www.cropmom.com/Digital_Scrapbooking.aspx templates and How to.

Project Title: _____

Student Name: _____

Date: _____ Teacher: _____

Math MATTERS Project Rubric

	1 point	2 points	3 points	4 points	Score
Amount of Project Completed	Little effort made, most items are unaddressed or incomplete	Some parts of the project were addressed and complete	Most of the project parts were addressed and complete, a few may be missing	All parts of the project were addressed and complete	
Quality of Work	Could not read project, project poorly organized	Project was partially organized, many parts were confusing or unrelated	Project was mostly organized, a few parts may be confusing or unrelated	Project highly organized and all parts clearly related to the topic	
Use of Time and Effort	Did not use time effectively	Used some time effectively, but was often off task	Used most time effectively, occasionally off task	Student used all available time to the fullest	
Presentation	Student could not explain own project	Student needed to be prompted to explain own project	Student explained project with little prompting	Student easily explained the project and could answer questions	
				Total	

A total score of 12 or more points is needed to consider the project complete.

Notes:

Rubric is an adaptation of Rcampus Math Project Rubric: Fraction Word Problems
http://www.rcampus.com/rubricshowc.cfm?code=F945W8&sp=true&

Materials
- **BLM** Outrigger Canoe Conversion-Measurement Lab Record Sheet
- **BLM** Solve It! Problems 1-2
- **BLM** Fraction Action and *X* Marks the Spot
- **BLM** Lessons 1-3 CGI ***Call it Courage***

Math Objectives
- Solve problems using a measurement tool and calculating measurements.
- Model and solve multistep word problems.
- Solve problems involving fractions, ratios, and proportions.
- Solve for a variable.
- Compose and decompose numbers.

Language Objectives
- Speak to partners, teacher, and class using vocabulary.
- Discuss problem solving process and strategies.

Math Vocabulary
fraction
ratio
percent
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
millrace
trough
cauterize
perilous
reverberated
impetus

Assessed TEKS for this Unit
- 5th – 5.3H*, 5.3K*
- 6th – 6.3A, 6.5B*, 6.3B, 6.3C

**denotes Revised 2014 TEKS*

Unit 3, Lesson 1 — Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post-assessment. They are not optional.

ESSENTIAL

Measurement Lab
- **Lesson 1 – *Outrigger Canoe Conversion* (6th assessment items 1,3,6)**
- Lesson 2 – Moai Height Conversion (6th assessment item 1,3,6)
- Lesson 3 – Moai Weight Conversion (6th assessment item 1,3,6)

Lesson 1 Materials
None for this activity

Lesson 1 Student Groups
Students will learn how to convert between units of measure within the customary measurement system using a ratio table. They will be familiar with the way the ratio table works from previous units and lessons. However, this is their first experience using it to convert units of measure. The purpose does NOT change the procedure. It remains the same. A Teacher's Guide is provided for the BLM.

1) Students answer questions on BLM using a ratio table.

Solve It! Multi-step problem solving
- **Lesson 1 – *pairs, 2-step* (5th assessment item 4,5)**
- Lesson 2 – pairs, 2-step (6th assessment item 4)
- Lesson 3 – independent, 2-step (6th assessment item 7)

Fraction Action
- **Lesson 1 – *(5th assessment item 1,2,3)***
- Lesson 2 – (5th assessment item 1,2,3)
- Lesson 3 – (5th assessment item 1,2,3)

***X* Marks the Spot**
- **Lesson 1 – *(6th assessment item 8)***
- Lesson 2 – (5th assessment item 6)
- Lesson 3 – (5th assessment item 6)

CGI
- **Lesson 1 – Part-Part-Whole (5th assessment item 4)**
- Lesson 2 – Compare Referent Unknown (5th assessment item 5)
- Lesson 3 – Price Partitive Division (6th assessment item 6)

ELPS (*English Language Proficiency Standard*)
2D, 2E, 2H, 3B, 3D, 3H, 4C

CCRS (*College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.2., I.C.1., I.C.2., I.C.3., II.B.1., ELA II.B.1., II.B.3., III.B.1., III.B.2., IV.A.3., IV.B.1. MATH I.B.1., II.B.1., II.C.1., IV.B.1., IV.B.2., VI.C.2., VIII.A.2., VIII.A.2., VIII.A.3.

Unit 3, Lesson 1 — Grades 5-6
Daily Routine - continued

The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.

OPTIONAL

Target Number

- **Lesson 1 – *Target Number 25***
- Lesson 2 – Target Number 50
- Lesson 3 – Target Number 75

Money Matters

(*If you have a full program and wish to use this optional activity, you will find BLMs and Explanations on MAS Space.)*

Unit 3 CGI Problems for *Call It Courage*

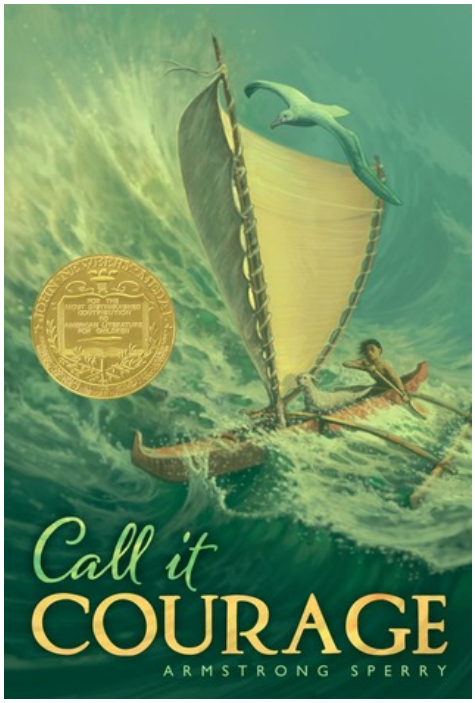
Part-Part-Whole	*Whole Unknown* Mafatu spent __ hours on the water in his first canoe and __ hours on the water in the canoe he made. How many hours did he spend on the water? How many minutes is that? 504.2, 408.75 413.8, 377.3	*Part Unknown* Mafatu caught __ fish in his bamboo trap. __ were crayfish, crabs and lobsters and the rest were Mullet. How many were Mullet? 675, 329 1084, 697	
	Multiplication	**Measurement Division**	**Partitive Division**
Grouping and Partitioning	__ boys went fishing. Each boy caught __ bonitos. How many bonitos did the boys catch? 37, 254 71, 109	The boys of the island caught __ bonitos. Each boy caught __. How many boys fished? 1824, 32 2948, 44	The boys of the island caught __ bonitos. If each of __ boys caught the same number of fish, how many did each boy catch? 405, 15 891, 33
Rate	Mafatu climbed to the plateau every day. He climbed __ feet each hour for __ hours. How high was the plateau? 224.6, 5.2 108.9, 7.7	Mafatu climbed __ feet up to the plateau. On average, he climbed __ feet per minute. How long did it take him to climb to the plateau? 2103, 29.9 1009, 31.5	Mafatu climbed __ feet up to the plateau. He climbed for __ hours. On average, how far did he climb per minute? 681, 3.7 1053.5, 8.2
Price	Mafatu fashioned fish hooks for the other boys on his island. If he charged __ per hook and sold __ hooks, how much money would he make? $0.35, 26 $0.21, 79	Mafatu sold fish hooks for __ each. He took in __ from selling fish hooks in one year. How many hooks did he sell? $0.14, $79.52 $0.08, $41.84	Mafatu sold __ fish hooks for a total of __. How much did he get for each hook? 453, $40.77 104, $18.72
Compare	*Difference Unknown* Mafatu made packs of whale bones for himself and Uri. Mafatu's pack had __ bones. Uri's pack had __ bones. How many times more bones did Mafatu have than Uri? 162, 27 35, 14	*Quantity Unknown* Mafatu caught __ crabs in his bamboo trap. He caught __ times more mullet than crabs. How many mullet did he catch? 58, 3.5 240, 3.2	*Referent Unknown* Mafatu used __ banana leaves for the roof of his shelter. This was __ times more than he used when cooking the boar. How many leaves did he use to cook the boar? 90, 2.5 120, 1.6

Unit 3 CGI Problems for *Call It Courage*

Parte-Parte-Entero	*Entero desconocido* Mafatu gastó __ horas navegando en su primera canoa y __ horas navegando en la canoa que él mismo construyó. ¿Cuántas horas gastó navegando? ¿Cuántos minutos es? 504.2, 408.75 413.8, 377.3	*Parte desconocido* Mafatu pescó __ peces en su trampa de bambú. __ fueron cangrejos azules, cangrejos y langostas y lo demás salmonetes. ¿Cuántos fueron salmonetes? 675, 329 1084, 697	
	Multiplicacion	**Division de medicion**	**Division partitiva**
Agrupamiento y division	__ muchachos salieron a pescar. Cada uno pescó __ bonitos. ¿Cuántos bonitos pescaron los muchachos? 37, 254 71, 109	Los muchachos de la isla pescaron __ bonitos. Cada muchacho pescó __. ¿Cuántos muchachos pescaron? 1824, 32 2948, 44	Los muchachos de la isla pescaron __ bonitos. Si cada grupo de__ muchachos pescó el mismo número de peces, ¿Cuántos peces pescó cada muchacho? 405, 15 891, 33
Razon	Mafatu subió a la mesa cada dia. Subió __ pies cada hora por __ horas. ¿Cuánto alto es la mesa? 224.6, 5.2 108.9, 7.7	Mafatu subió __ pies a la mesa. Como promedio, subió __ pies por minuto. ¿Cuánto tiempo tardó para alcanzar la cima? 2103, 29.9 1009, 31.5	Mafatu subió __ pies a la mesa. Subió por __ horas. Como promedio, ¿qué distancia subió cada minuto? 681, 3.7 1053.5, 8.2
Precio	Mafatu elaboró anzuelos para los otros muchachos de su isla. Si cobró __ por anzuelo y vendio __ anzuelos, ¿cuánto dinero ganaria? $0.35, 26 $0.21, 79	Mafatu vendió anzuelos por __ cada uno. Ganó __ de la venta de anzuelos en un año. ¿Cuántos anzuelos vendió? $0.14, $79.52 $0.08, $41.84	Mafatu vendió__ anzuelos por un total de __. ¿Cuánto ganó por cada anzuelo? 453, $40.77 104, $18.72
Comparar	*Diferencia desconocida* Mafatu hizo paquetes de huesos de ballena para él y Uri. El paquete de Mafatu tenía __ bones. El paquete de Uri tenía __ huesos. How many times more bones tenía Mafatu que Uri? 162, 27 35, 14	*Cantidad desconocido* Mafatu pescó __ cangrejos en su trampa de bambú. Pescó __ times más salmonetes que cangrejos. ¿Cuántos salmonetes pescó? 58, 3.5 240, 3.2	*Referente desconocido* Mafatu usó __ hojas de plátano para el techo de su refugio. Esto fue __ times more que usó cuando asó el jabalí. ¿Cuántas hojas usó para asar el jabalí? 90, 2.5 120, 1.6

Unit 3 Lesson 1 – Daily Routines – Measurement Lab
One per student

Outrigger Canoe Conversion – Measurement Lab Record Sheet



During the Classroom Lesson you will begin reading the book, ***Call it Courage*** by Armstrong Sperry, which will introduce you to the outrigger canoe.

Task:

- Work with your partner or group to convert the outrigger canoe measurement.
- Find a group that solved it differently and follow directions for #2.

1. Assuming Mafatu's canoe was 60 inches in length. Use a ratio table to convert that measurement into feet.

   What related ratio do you know?

   What ratio are you finding?

   Label the ratio table and begin cloning until you find the measurement you are looking for. You will have more than enough columns in the given ratio table to solve this problem.

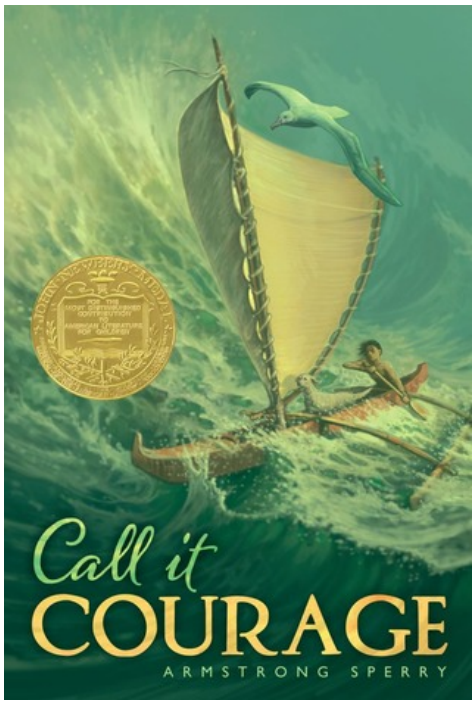
labels	known						unknown

2. Find a group that solved their ratio table differently, copy their table below, and discuss comparisons. How were your tables the same? Different? Did both groups arrive at the same answer?

labels	known						unknown

Unit 3 Lesson 1 – Daily Routines – Measurement Lab
One per student

Conversión de canoa con estabilizador - Hoja de registro del laboratorio de medición



Durante la lección en el salón, empezarás por leer el libro ***Call it Courage*** por Armstrong Sperry que te presentará el mundo de las canoas con estabilizador.

Tarea:

- Colabora con tu compañero o grupo para convertir las medidas de la canoa con estabilizador.
- Encuentra un grupo que lo haya resuelto de manera distinta y sigue las instrucciones para el #2.

1. Asumiendo que la canoa de Mafatu medía 60 pulgadas de largo. Usa una tabla de relaciones para convertir esta medida a pies.

   ¿Qué relación similar conoces?

   ¿Qué relación estás encontrando?

   Etiqueta la tabla de relaciones y empieza a clonar hasta que encuentres la medida que estás buscando. Tendrás columnas más que suficientes en la tabla de relaciones proporcionada para resolver este problema.

etiquetas	**conocido**						**desconocido**

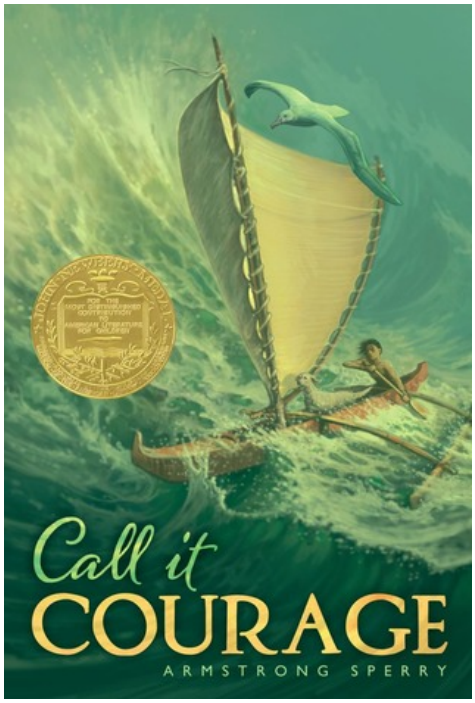
3. Encuentra un grupo que haya solucionado su tabla de relaciones de manera diferente, copia su tabla abajo y hablen sobre comparaciones. ¿En qué se parecían sus tablas? ¿Y diferentes? ¿Los dos grupos llegaron a la misma respuesta?

etiquetas	**conocido**						**desconocido**

Unit 3 Lesson 1 – Daily Routines – Measurement Lab
Teacher copy

Outrigger Canoe Conversion – Measurement Lab Record Sheet Teacher Guide

During the Classroom Lesson you will begin reading the book, ***Call it Courage*** by Armstrong Sperry, which will introduce you to the outrigger canoe.



Task:

- Work with your partner or group to convert the outrigger canoe measurement.
- Find a group that solved it differently and follow directions for #2.

2. Assuming Mafatu's canoe was 60 inches in length. Use a ratio table to convert that measurement into feet.

   What related ratio do you know? 12 inches: 1 foot

   What ratio are you finding? 60 inches: ??? feet

   Label the ratio table and begin cloning until you find the measurement you're looking for. You will have more than enough columns in the given ratio table to solve this problem. There are several ways to solve this problem. Answers will vary.

labels	known	double	triple 12:1	double 24:2			unknown
inches	12 in	24 in	36 in	48 in			60 in
feet	1 ft.	2 ft.	3 ft.	4 ft.			??? ft.

3. Find a group that solved their ratio table differently, copy their table below, and discuss comparisons. How were your tables the same? Different? Did both groups arrive at the same answer?

labels	known	double 1:12	triple 1:12				unknown
feet	1 ft.	2 ft.	3 ft.	(add the 2 previous columns)			5 ft.
inches	12 in	24	36 in	→			60 in

Unit 3 Lesson 1 – Daily Routines – Solve It! (pairs) **5-6**
1 per partner pair

Problem 1:
Tiffany and Rick decided to combine their savings into one account for their son Daniel. She made two deposits. One was $236.02 and the other was $168.35. How much did Tiffany contribute?

- What is the answer to the question? Show your solution strategy.

Problem Solution (Partner #1) Name:	**Solution Verification** (Partner #2) Name:

Problem 2:
If their son's savings account now had a balance of $809.51, what was Rick's contribution?

- What do you need from Problem 1 to solve Problem 2?
- Be sure to verify the answer to Problem 1 before solving Problem 2.
- What is the answer to the question? Show your solution strategy.

Problem Solution (Partner #2) Name:	**Solution Verification** (Partner #1) Name:

Unit 1 Lesson 1 – Daily Routines – Solve It! (pairs) **5-6**
1 per partner pair

Problema 1:
Tiffany y Rick decidieron combinar sus ahorros en una sola cuenta para su hijo Daniel. Ella hizo dos depósitos. Uno fue por $236.02 y la otra fue por $168.35. Si la cuenta de ahorros de su hijo ahora tenía un saldo de $809.51, ¿cuánto contribuyó Tiffany?

- ¿Cuál es la respuesta a la pregunta? Muestra tu estrategia de solución.

Solución del problema (#1) Nombre:	**Verificación de la solución (**#2**)** Nombre:

Problema 2:
Si la cuenta de ahorros de su hijo ahora tenía un saldo de $809.51, ¿cuál fue la contribución de Rick?

- ¿Qué necesitas del problema 1 para resolver este problema?
- Asegúrate de verificar la respuesta del problema 1 antes de resolver este problema.
- ¿Cuál es la respuesta a la pregunta? Muestra tu estrategia de solución.

Solución del problema (#1) Nombre:	**Verificación de la solución (**#2**)** Nombre:

Unit 3 Lesson 1 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

Monroe Middle School keeps a board with record breaking javelin throw distances posted for their track and field athletes. What is the difference between the farthest and the shortest of the distances listed?

Javelin Throw	
All-time middle school record 1989	$54\frac{1}{2}$ meters
Monroe Middle record 2004	$47\frac{1}{10}$ meters
Longest distance this year	$43\frac{3}{5}$ meters

X Marks the Spot

Solve for x.

Penny left a 10% tip for the baker who made her sister's birthday cake. If the tip was \$20, how much did the cake cost *(x)* before tip?

Unit 3 Lesson 1 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

Las Secundaria Monroe tiene un tablero de avisos donde se publican las distancias de lanzamiento de jabalina que rompen récords para sus atletas. ¿Cuál es la diferencia entre la distancia más larga y la más corta publicadas?

lanzamiento de jabalina	
Récord de la secundaria de todos los tiempos 1989	$54\frac{1}{2}$ metros
Récord de Monroe Middle 2004	$47\frac{1}{10}$ metros
Distancia más larga este año	$43\frac{3}{5}$ metros

X Marca el sitio

Resuelve para x.

Penny dejó una propina del 10% para el panadero que hizo el pastel de cumpleaños de su hermana. Si la propina fue de $20, ¿cuánto costó el pastel *(x)* antes de la propina?

Grade Bands: 3-4 and 5-6, Unit 3 and 4 Writing Workshop

- **Genre:** Pourquoi Story (Folktale)
- **Writing Objective:** Students create an imaginative folktale that either explains why something is as it is or explains how something in world came to be.
- **Audience**: readers/listeners from all ages

Organization of text: Paragraphs, no chapters.

- Contains key elements of folktale (i.e. supernatural or magical element, main characters representing a human quality of good or bad, main character changes from beginning to end of tale)
- clearly defined focus, plot (problem and solution), and point of view
- created through the use of sensory details
- dialogue that develops the story

Students choose their focus: Either explaining a why something is how it is or explaining wonder of the world. Encourage students to have a minimum of **three paragraphs containing five to six sentences for each** for grades 3-4 and a minimum of **five paragraphs containing five to six sentences** for grades 5-6. However, for less proficient writers you may suggest they focus on fewer sentences, and for more proficient writers you can challenge them to create more paragraphs or sentences. The following are some possible topics for the folktales. Foster topics based on students' interests or their home country. Students will create a story map utilizing the graphic organizer for summarization in unit 3. Students will also utilize the elements of a folktale chart and story chart when proofreading others folktales for content.

- Great Wall of China (China)
- Chichen Itza (Yucatan, Mexico)
- Machu Picchu (Cuzco Region, Peru)
- Pyramids (Egypt)
- Grand Canyon (Arizona)
- Northern Lights (North America/Alaska)
- Niagara Falls (Canada)
- Leaning Tower of Pisa (Italy)
- Stonehenge (England)

Option: Students can talk to at least two classmates about their topic and list of ideas. Take on notes on their peers' suggestions. Encourage students to listen to their peers' suggestions for the purpose of helping bring in the focus of their topic.

Week 1

Day 1: Brainstorm/Planning- Explain to students that many stories are written to entertain readers. Since they are becoming experts in storytelling and next week they will be reading folktales, they will write a folktale that explains a wonder of the world or explains why something is the way it is. Ask students: What is something you've always wondered about?

Have students brainstorm topics or questions they wonder 'why' about. Jot down a list of student's ideas on chart paper. You may need to rephrase what students share so that it sounds like a title for a folktale. Have students a focus from the list, and write it down so they're ready for the next Writing Workshop.

Day 2 & 3: Research and Draft- ***Model*** for students how to begin the planning for their folktale by filling the beginning of the graphic organizer together as a class. Model how to transfer the information from the beginning of the organizer into a paragraph. This is particularly helpful for ELLs, but useful for all students, to give an organizational reference for the story construction. When you model, you're showing students how you think aloud – "What do I know about this topic that I can base the folktale on?" You can model listing the details you know aloud, or referring to a book or website (www.nationalgeographic.com) to recall specific details. You're also modeling how to elaborate on sentences you've written so that in the end, the paragraph is well developed.
Then provide time for your students to collaborate and write in information within the organizer. The information/details are then drafted into sentences. Allow students to write sentences on paper that contains widely spaced lines. The allowance of space is for revising and editing by peers.

Week 2

Day 1 & 2: Revising/Editing- Work on elaboration with students who are ready. What else could they add to this sentence/paragraph? Are there other folktale elements that can be included or elaborated? Encourage students to include sensory details and dialogue in the story. Can student identify the problem and solution? Allow peers to utilize the folktale element chart and plot chart to edit stories.
If you notice that many of your students are making the same kind of errors, that's a sign that a whole-class mini-lesson is necessary. Provide examples from student drafts to assist with the lesson. One-on-one conferences may be necessary in order to assist particular students, continue to provide feedback and monitor the students' writing.

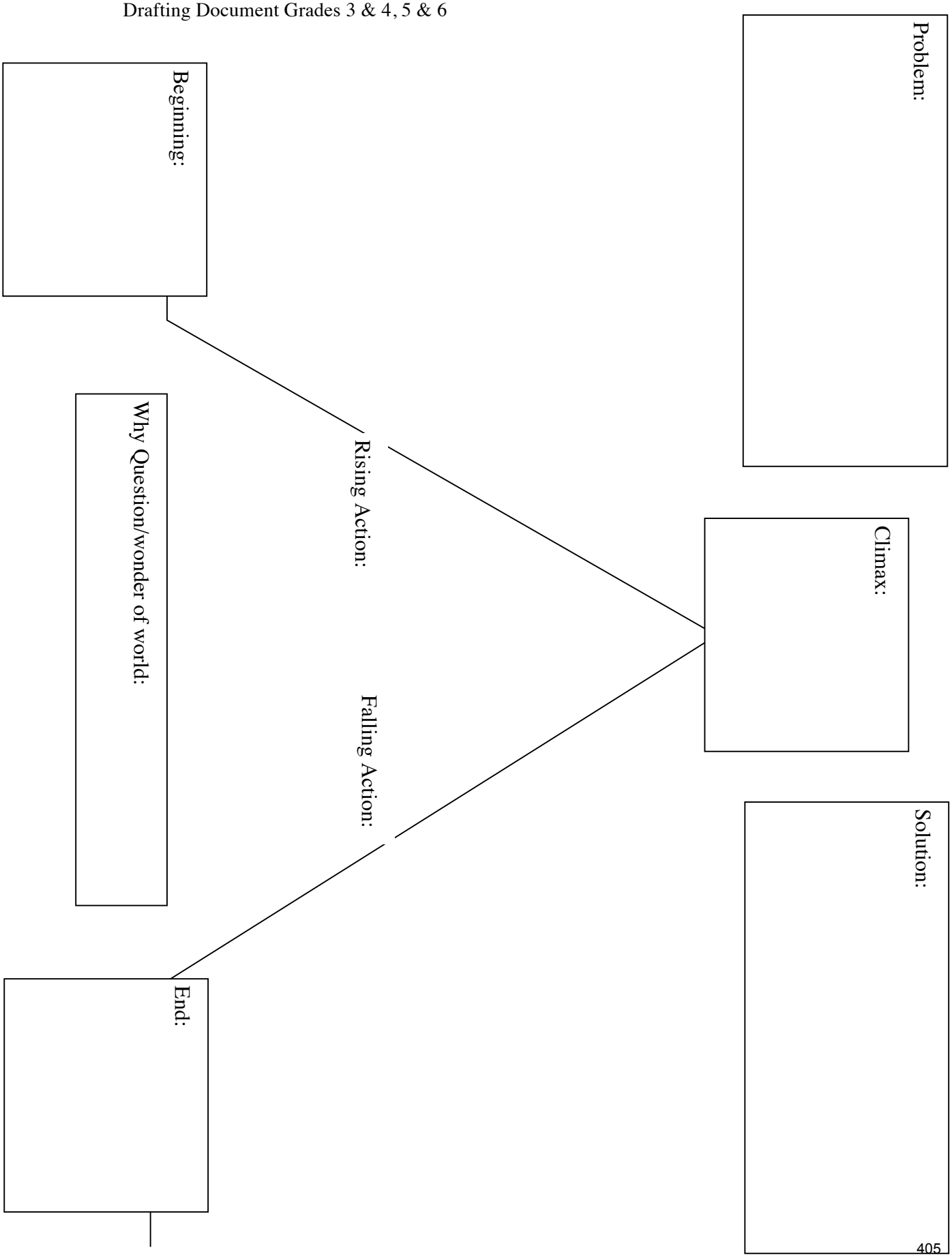
Day 3: Publishing- Have students staple their pages together to create their story or type their story into word and include clip art. They can read their folktales to a partner or team up with another grade band, and have your class share their stories. This works well because all grades are reading and learning about similar topics in units 3 and 4. The other class could share their writing with your students as well.

Revising/Editing Document grades 5 & 6

element	***included***	***Not included***
lesson learned		
wonder of the world explained		
supernatural or magical element		
main character represent a human quality of good or bad		
main character changes from beginning to end of tale		
plot contains problem and solution		

When?	Where?
Why question posed/Wonder of world to be explained:	
Main Characters/Animals:	
Personification examples:	
Problem:	
Solution:	
Answer to why question/Wonder of world explained:	

Drafting Document Grades 3 & 4, 5 & 6



Literature Selection
Call it Courage
by Armstrong Sperry

Materials
- **BLM** Vocabulary Cards
- **BLM** Vocabulary Illustration (teacher)
- Small Sticky notes
- Two sheets of lined notebook paper per student
- 1 index card per student
- 1- 11x17 in paper per student for illustrations

Math Vocabulary
fraction
ratio
percent
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
millrace
trough
cauterize
perilous
reverberated
impetus

ELPS (*English Language Proficiency Standard*)
1E, 1F, 2D, 3C, 3E, 4D, 4G, 4I, 4J

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.C.2., I.C.3., II.A.2.
ELA II.A.1., II.A.3., II.A.4., II.B.1., II.D.2., III.B.2.

Technology Option
http://www.ogram.org/sperry/graphics/images/frenchpolynesia.jpg
You can find Hikueru, Mafatu's home island on this map in the Tuamotu chain. One of the Marquesan islands, located north, might have been where Mafatu had his adventures and

Unit 3, Lesson 1 — Grades 5-6

Classroom Lesson

Every day teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

Math Objectives:
- Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models.
- Represent ratios and percents with concrete models, fractions, and decimals.

Language Objectives:
- Determine or clarify the meaning of unfamiliar or multiple meaning words using context clues.
- Describe events that advance the story, explaining how each event foreshadows future events.
- Make inferences and draw conclusions about the structure and elements of fiction and provide evidence from text to support understanding.

BEFORE READING
Building Background – Vocabulary & Literature
Reveal the literature vocabulary cards one at a time to the students and display in a pocket chart or board. Follow the same line of questioning for each word.

Point to the first word. *(millrace)*

Ask, "Who can read this word?"
Say, "Give me a thumbs up for 'I can' or thumbs down for 'not sure.'"
Allow students to indicate their response. Then, ask students to reread the word aloud after you.
Ask, "How many parts or syllables does this word have?" Guide students to tapping with their finger or counting their jaw opening with one hand how many syllables the word contains. Allow for responses.
This word has two parts or two syllables.
Ask, "Who has heard this word used before or read it before today?"
Allow for responses.
Say, "I have heard this word once when I was visiting in Indiana. I saw a millrace while hiking (or running) on the trails."
Ask, "Who thinks they know what this word means? Give thumbs up or thumbs down."

encountered the "eaters of men."

Use as many pictures, photographs, even sound waves needed to make content comprehensible to the students. Use realia (real objects) when possible. Unfamiliar words are plentiful in this book, be prepared to stop and clarify with students.

Sticky note example for unfamiliar word: (convulsively)

His fingers gripped the paddle convulsively.

Say, "Turn to your neighbor **(or partner)** and tell them what you think it means." Allow students to share.
Say, "I will use the word in a sentence, and then we will determine the meaning together using the clues in the sentence."

The river spills into the overgrown millrace and the waterwheel slowly begins to turn.

Ask, "From this sentence can you describe a millrace?" Allow for responses of location and an attribute of a millrace.
Say, "A millrace is the water flow that moves the waterwheel."

Option: show an illustration of a millrace or a drawing of a millrace. You can also use **BLM Vocabulary Illustrations**.

Say, "Reread the word again together."
Ask, "Who can use the word in a sentence? Give thumbs up or thumbs down."
Say, "Turn to your shoulder partner and tell them the sentence. Each person should share a sentence."

Continue in the same manner of discovery questioning for each word on the literature vocabulary list. Add in questions that expand the connection of the vocabulary to real life. Other questions include: *Why is (vocabulary word) important to us? What does (vocabulary word) also make you think of? What do you think the opposite of (vocabulary word) might be? What is another word that means the same thing?*

Upon completion of the list, have students reread each word aloud in class together benefiting the proficient and non-proficient English speaker through repeated exposure.

Say, "The book we are starting today has five chapters. There might be words that we get stuck on or are not sure what their meaning is or if we are even reading the words correctly. I want you to use a strategy we practice in Unit 1 for these words. The sticky note is to mark the words you are not sure of, so that later we can revisit the words and help clarify their meaning if needed. We will use this strategy through the entire book.

Ask, "What is something that you are afraid of or that you fear?"
Allow students to respond. Be sure to share what you fear.

Ask, "How do you overcome your fear? What do you do when you are facing your biggest fear?" Allow students to respond.

Show the front of the book…

Say, "We are going to be reading a book titled, *Call It Courage* by Armstrong Sperry. The main character in this book is afraid of something. He has been afraid of it for so long others have teased him about his fear, but he decides he is not going to put up with it anymore. We are going to read and find out what his fear is and what he is going to do about it."

Teacher Note
As specified in the "percent" vocabulary definition, any type of percent context is applicable to the strip diagram strategy. The examples could represent tax, interest, tips, and many more percent situations.

Share the map of French Polynesian islands including Hikueru *(main character's home island)*. Locate the islands vicinity on a globe to give students and understanding the setting of the story.

Say, "This story also has another name, The Story of Mafatu, the Boy Who Was Afraid. It is said that this story has been passed from generation to generation amongst the early Polynesians because courage is something they hold in high regard. It is very important to them and their way of life. There are also many things that occur in this story that might seem impossible or could be possible because they could happen even today."

Direct students to take out two sheets of lined paper. At the top of one page labeled **Could Happen** and on top of the second page, **Could Not Happen.**

Say, "As we read the story, we will record events that fit in either of these two categories. To write them in, we need to provide a valid reason why they fit in the category."

DURING READING
Comprehensible Input - Vocabulary & Literature
Read pp. 1-33 (chapters 1 -2):
Begin reading the story as a whole class, alternate readers, and read you-read portions to the students as well. The manner in which the book is read will depend on the level of readers in your class, their decoding ability, language proficiencies, and the time allotted for oral reading. As you read portions of the text, model comprehension monitoring strategies to help readers become aware of whether they are understanding the text they read.

Unit 3, Lesson 1 — Grades 5-6

Classroom Lesson - continued

As you model good reading, intentionally reveal a roadblock to understanding the text:

- Identify the difficulty *(misread word, unknown word, section that doesn't make sense)*.
- Use think-aloud procedures that highlight where and when the difficulty began.
- Restate what was read.
- Looking back through the text *(rereading)*.
- Looking forward, reading ahead to find information that might help.

During the reading of this book, you will stop periodically throughout the reading for each day to contemplate predictions about what might follow logically in the next portion or chapter of the book. It is important for the class to revisit predictions made after sections of the book are read. Students will understand then how predictions impact comprehension. Students can vote on which predictions are most likely and explain why as the reading continues and the plot unfolds.

Record major events that occur within the two categories: **Could Happen/Could Not Happen.** The events are 'major' if it is an event that directly affects the main character and the plot of the story. Ensure that students consecutively number their events to be used in an activity. As you and the students record the numbered events under the categories, write the numbers on separate smaller pieces of paper for a drawing activity at the end of the lesson.

Stop at the end of chapters to discuss sticky marked words. Discuss with the group context clues to help with clarification. Direct through utilizing the same steps you used while clarifying understanding of text when you hit a roadblock.

As you complete the final page of today's reading…
Say, "I wonder what will happen to Mafatu now that he is on this island."
Ask, **"**What do you wonder?"
Encourage students to share in a complete sentence *("I wonder…")*.

AFTER READING
Practice and Application – Vocabulary & Literature
Guide students in rereading with partner the events listed under both categories **Could Happen/Could Not Happen**. Ensure that students have their events numbered. Place the numbered smaller pieces of paper in a container *(an object related to the story possibly)* for students to draw from.

Unit 3, Lesson 1 — Grades 5-6

Classroom Lesson - continued

Say, **"**This version of this story did not include illustrations, but that should not stop the creation of illustrations in your mind. The author used great vocabulary and sentence structure to create mind movies that clarify our understanding of the story. You will pick a number from the *(container)* and illustrate that event in the story. Afterwards, write the event on the index card to be placed under the picture.

Students can work in partners or individually, depending on time and proficiency levels.

Allow students time to illustrate the event selected from the container and write the event. Pictures can be placed on a wall of the classroom and a gallery walk can be conducted between classes.

Students will be adding to the **Could Happen/Could Not Happen** pages over the next two lessons. Illustrations can be left on the wall until the end of lesson 3.

ELPS (*English Language Proficiency Standard*)
1E, 2E, 2G, 3B, 3D, 3F, 4C, 4E, 4H

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.C.1., I.C.2., II.D.1.
MATH I.B.1., II.B.1., II.C.1., IV.B.1., VI.B.4.

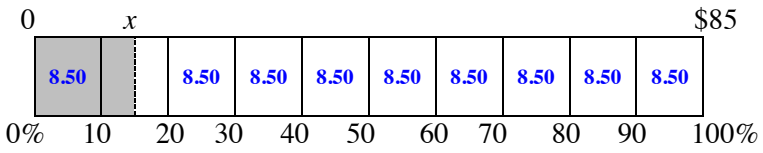
Transition to Math

Review percent concepts. Students can use the strip diagram, equivalent ratio setup, and/or mental math strategies to solve percentage problems *(tips)* in this lesson. Please write these problems on the board or projector and work through them with the class.

Problem #1
Ginger left a 15% tip on a bill that was $85.00. What was the tip?

15% of $85.00 = ???

Bar Model:



Bar model was broken into ten sections because 15% is one and a half of those sections *(shaded)*. 10% is easy to find from $85. 10% = $8.50. 5% = $4.25. Therefore, 15% = $12.75. The tip would be $12.75.

Mental Math:
Same process as bar model but without the diagram.

Equivalent Ratio Setup:
This is one example, but students can use the bar model as a guide because it naturally sets up the equations. Compare to the diagram above.

$$\frac{\$x}{15 \text{ percent}} = \frac{\$85}{100 \text{ percent}}$$

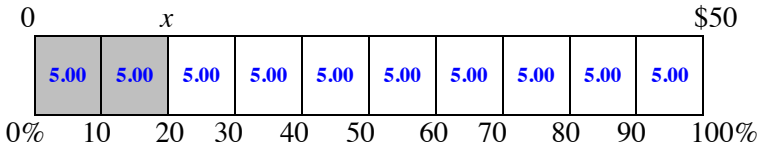
This method results in cross multiplication, so it is recommended that students solve this problem with either the bar model or mental math strategies. Equivalent Ratio Setup is not an efficient strategy for this problem.

Problem #2
Paul gave a 20% tip to the cab driver. The fare was originally $50. What did Paul pay the cab driver altogether?

20% of $50.00 = ???

Unit 3, Lesson 1 — Grades 5-6
Classroom Lesson - continued

Bar Model:



Bar model was broken into ten sections because 10% is easy to find from $50, and 20% would be double that amount. 10% = $5.00. Therefore, 20% = $10.00. Add the tip to the fare for $60 total.

Mental Math:
Same process as bar model but without the diagram.

Equivalent Ratio Setup:
This is one example, but students can use the bar model as a guide because it naturally sets up the equations. Compare to the diagram above.

$$\frac{\$x}{20 \text{ percent}} = \frac{\$50}{100 \text{ percent}}$$

Both a scale factor and a constant of proportionality can be found with this setup. 50 to 100 is an invariant of (x2). "What times 2 equals 20?" *(10)*. Or, 20 to 100 is a covariant of (x5). "What times 5 equals 50?" *(10)*. Either relationship can be used. Add the $10 tip to the fare for $60 total.

Time permitting, here are some other problem examples students can work for extra practice.

Problem #3
Jase wanted to leave a 35% tip on a food bill of $67.00. What will the tip be? *($23.45)*

Problem #4
Felicia left a $25 tip on a bill that was $100. What percent tip did she leave? *(This should be easy mental math. $25 is a quarter of $100. Therefore, it is 25%.)*

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

millrace

trough

cauterize

perilous

reverberate

impetus

caz

artesa

cauterizar

peligroso

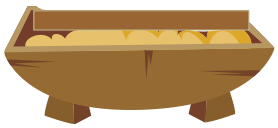
reverberar

impulso

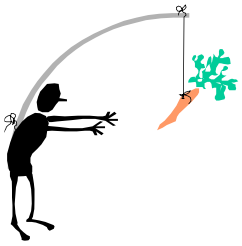
millrace

reverberate

trough



impetus



cauterize

perilous

Materials
- **BLM** Mafatu's Fruit

Math Vocabulary
fraction
ratio
percent
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
millrace
trough
cauterize
perilous
reverberated
impetus

Teacher Note
The Transition to Math was utilized as a review piece for today. The TV Lesson will start a new concept unrelated to the Transition.

ELPS (*English Language Proficiency Standard*)
1F, 1G, 2F, 2G, 3D, 3H, 4E, 5B, 5C

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.1., I.C.2., I.E.1., II.B.2.
ELA I.A.2., II.A.2., II.A.3., III.B.2., IV.A.3.
MATH I.B.1., I.C.1., II.B.1., IV.B.1., VIII.A.1., VIII.A.3., VIII.A.4.IX.A.2.

Teacher Note
It is important that students label their ratios in order to keep them consistent. Monitor class to make sure they are labeling.

Unit 3, Lesson 1 — Grades 5-6

TV Lesson

Math Objectives:
- Use ratios to describe proportional situations.
- Use ratios to make predictions in proportional situations.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Building Background
See Teacher Note in sidebar.
Students should be getting comfortable with the solution strategies for finding equivalent ratios or unknowns in ratio situations. The TV Lessons in this unit will continue to strengthen those skills and strategies.

The problem situations in this lesson refer to the tropical fruit Mafatu finds on the island. If students did not reach p.39 in ***Call it Courage***, continue with the lesson and explain that they will soon read about his discoveries. The fruit is not an integral part of the story, so the adventure will not be tarnished by mentioning it before it is read.

Comprehensible Input
The purpose of this problem set is to expose students to the many ways they can set up equivalent ratios *(proportions)*. The numerical relationships are friendly/compatible so they may focus on the process.

Problem #1
Mafatu enjoyed the juicy sun ripened fruit he found on the island. His favorite combination was two mangoes and five guavas. They filled his belly and quenched his thirst. After a few days Mafatu counted 15 guava peels? Using the ratio given, how many mangoes did he eat?

"What ratio was given?" *(2 mangoes: 5 guavas)*
"What else do we know?" *(he ate 15 guavas)*
"What are we trying to find?" *(number of mangoes he ate)*
"How can we set up these ratios?" *(Most likely, because it is the way they have practiced during the lessons so far, students will want to set up the given ratio equal to the unknown.)* Discuss different ways to set up equivalent ratios. LABELS MUST STAY CONSISTENT!

Proportion #1- Most obvious

$$\frac{\textbf{2 mango}}{\textbf{5 guava}} = \frac{\textbf{? mango}}{\textbf{15 guava}}$$

Teacher Note
Be explicit that the unknown (variable) may be anywhere within the ratio setups. Where the unknown is placed should NOT be the focus when setting up the equations. The focus is the relationship between ratios and the labels.

To make this point clear, Problem #2 deliberately sets up the proportions where the unknown will be in the denominator for Proportion #1.

Proportion #2- Inverse of Proportion #1

$$\frac{\textbf{5 guava}}{\textbf{2mango}} = \frac{\textbf{15 guava}}{\textbf{? mango}}$$

Proportion #3- Same fruit comparison
The key here is that the given ratio of 2:5 occupies the numerators. Whereas, the unknown ratio stays consistent in the denominator.

$$\frac{\textbf{2 mango}}{\textbf{? mango}} = \frac{\textbf{5 guava}}{\textbf{15 guava}}$$

Proportion #4- Inverse of Proportion #3

$$\frac{\textbf{? mango}}{\textbf{2 mango}} = \frac{\textbf{15 guava}}{\textbf{5 guava}}$$

Of course, reversing each equivalent set of ratios across the equal sign is acceptable as well.

Solve each proportion with numerical relationships *(not cross multiply)*. The answer is six mangoes.

Split students into four groups. Group 1 will use Proportion #1, group 2 will use Proportion #2, group 3 will use Proportion #3, and group 4 will use Proportion #4 for the next problem situation.

Problem #2
Mafatu ate three breadfruit and four small bananas with his dinner each night. He noticed from the tree that he had picked and eaten six breadfruits. How many bananas should he have eaten?

"What ratio was given?" *(3 breadfruits: 4 bananas)*
"What else do we know?" *(he ate six breadfruits)*
"What are we trying to find?" *(number of bananas he ate)*

Group 1- Proportion #1

$$\frac{\textbf{3 breadfruit}}{\textbf{4 banana}} = \frac{\textbf{6 breadfruit}}{\textbf{? banana}}$$

Group 2- Proportion #2

$$\frac{\textbf{4 banana}}{\textbf{3 breadfruit}} = \frac{\textbf{? banana}}{\textbf{6 breadfruit}}$$

Group 3- Proportion #3

$$\frac{\textbf{3 breadfruit}}{\textbf{6 breadfruit}} = \frac{\textbf{4 banana}}{\textbf{? banana}}$$

Group 4- Proportion #4

$$\frac{\textbf{6 breadfruit}}{\textbf{3 breadfruit}} = \frac{\textbf{? banana}}{\textbf{4 banana}}$$

Allow students to share their answers. Discuss the different invariant and covariant relationships that they found. How are they related? The answer to the problem situation is eight bananas.

Problem #3
The setup is the same, but the unknown is in a different place.

Problem #4
Non-example:

$$\frac{\textbf{2 mango}}{\textbf{5 guava}} = \frac{\textbf{15 guave}}{\textbf{? mango}}$$

This is a non-example because the original ratio is mango to guava. Second ratio is guava to mango. Consistent labeling means that if the original ratio is mango to guava, the second ratio must also be mango to guava.

Non-example:

$$\frac{\textbf{3 breadfruit}}{\textbf{6 breadfruit}} = \frac{\textbf{? banana}}{\textbf{4 banana}}$$

Teacher Note
Problem #4 is crucial to understanding the correct proportional setups. Both non-examples provided show how consistent labeling is not the only indicator of correctly written proportions. Both have correct labeling. They are incorrectly setup because the relationship between comparisons was not preserved. There are many more non-examples.

This is a non-example because the second ratio does not preserve the comparison relationship. In the first ratio the numerator represents the original comparison and the denominator represents the increased amount. Therefore, the second ratio should also have a numerator that represents the original comparison relationship of four bananas.

Pirate's Corner
Which setup does your brain like best? Go to MAS Space and tell Captain Portio and the TV Teacher why you like that setup the most.

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 3 Lessons 1-3 – TV Lesson
Duplicate on cardstock and cut apart for word cards.

fraction

ratio

percent

scale factor

constant of proportionality

fracción

razón

porcentaje

factor de escala
constante de proporcionalidad

Unit 3 Lesson 1 – TV Lesson
One per student

Mafatu's Fruit

Work with your teacher and in groups to explore the different proportions.

1. Mafatu enjoyed the juicy sun ripened fruit he found on the island. His favorite combination was 2 mangoes and 5 guavas. They filled his belly and quenched his thirst. After a few days Mafatu counted 15 guava peels? Using the ratio given, how many mangoes did he eat?

Proportion #1:

Proportion #2:

Proportion #3:

Proportion #4:

Answer _____

2. Mafatu ate 3 breadfruit and 4 small bananas with his dinner each night. He noticed from the tree that he had picked and eaten 6 breadfruits. How many bananas should he have eaten?

Answer _____

3. How is your proportion different than the corresponding proportion in the first problem situation? How are they alike?

4. Give an example of a ratio proportion that is set up INCORRECTLY. Explain your reasoning.

Unidad 3 Lección 1 –

La fruta de Mafatu

Colabora con tu maestro y en grupos para explorar las diferentes proporciones.

5. Mafatu disfrutaba de la fruta madurada por el sol que encontró en la isla. Su combinación favorita era 2 mangos y 5 guavas. Con esto llenaba su estómago y calmaba su sed. Después de algunos días, Mafatu contó 15 cáscaras de guava. Usando la relación dada, ¿cuántos mangos comió?

Proporción #1: Proporción #2:

Proporción #3: Proporción #4:

Respuesta _____

6. Mafatu comía 3 frutas del árbol del pan y 4 plátanos pequeños con su cena cada noche. Se dio cuenta al ver el árbol de que había cortado y comido 6 frutos del árbol del pan. ¿Cuántos plátanos debe haber comido?

Respuesta _____

7. ¿En qué se diferencia tu proporción de la proporción correspondiente en la situación del primer problema? ¿En qué se parecen?

8. Da un ejemplo de una proporción de relación que se establece de manera INCORRECTA. Explica tu razonamiento.

Materials
- set of dominoes
- scratch paper
- 12x12 multiplication chart (optional)

All items listed above per partner pair.
- **BLM** Ridiculous Ratios Game Directions
- **BLM** Ridiculous Ratios Record Sheet

Math Vocabulary
fraction
ratio
percent
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
millrace
trough
cauterize
perilous
reverberated
impetus

ELPS (*English Language Proficiency Standard*)
1G, 2E, 2G, 2H, 3D, 3F, 4F, 5A, 5B

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ELA I.A.1., I.A.2., II.A.2., III.B.1., III.B.2., IV.A.3.
MATH I.B.1., I.C.1., II.B.1., IV.B.1., VIII.A.1., VIII.A.3.

Unit 3, Lesson 1 — Grades 5-6

Follow-up

Math Objectives:
- Use ratios to describe proportional situations.
- Use ratios to make predictions in proportional situations.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

If students did not finish the questions during the TV Lesson they may do so during this time.

Practice and Application
Students will play the game Ridiculous Ratios. Dominoes with blanks represent unknowns. The game allows students a lot of freedom in how they set up equivalent ratios. It is imperative that the teacher checks for understanding and monitors groups. A 12x12 multiplication chart may be used if necessary.

QUESTIONS
- Why did you choose to set up your ratios this way?
- What relationship did you use here, and did it cause you to set up your ratios this way?

Recursive Review
Please use **BLM** *to answer the Recursive Review questions.*

- Phillip vacuum sealed 24.5 lbs. of deer meat on Wednesday, 52.25 lbs. on Thursday, and 78.09 on Friday. What was the total weight in deer meat after Friday?

Writing Topics
Independent Writing Topic
Students will have a daily writing activity which will incorporate the day's focus math vocabulary.

- **Explain how understanding scale factor and constant of proportionality helped you set up your ratios during the game.**

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 3 Lesson 1 – Follow-up
One per group

Ridiculous Ratios Game Directions

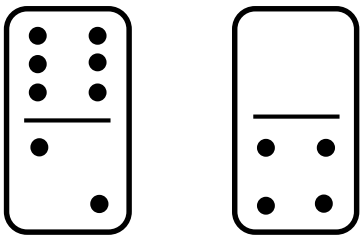
Materials:

- set of dominoes (blanks in separate pile)
- 12x12 multiplication chart (optional)
- **BLM** Ridiculous Ratios Record Sheet

Procedure:
The object of the game is to correctly solve for an unknown in an equivalent ratio situation to earn points and have the highest score when class ends.

- Separate all dominoes with "blanks" into a different pile. The "blanks" represent the unknowns. Lay dominoes face down in a single layer between players. (Should have two separate piles.)
- Player 1 chooses one domino from <u>each</u> pile and arranges them to create an equivalent ratio equation (proportion). The domino from the first pile represents the known ratio. The second domino represents the ratio with the unknown. (Look for easy relationships and compatible numbers to help you choose a setup.)
- Player 1 solves for the unknown on BLM. Player 2 uses scratch paper to verify answer.
  Correct: Solution for the unknown represents the number of points earned.
  Incorrect: Player receives one point (for effort).
- Play moves to Player 2. Repeat process.
- Highest score when class ends is the winner!

Ex:
Player 1 chooses dominoes 2:6 and blank:4.



Player 1 chooses this proportion because 2 and 4 are compatible with a scale factor of (x2) or double. 6 to 4 would not be as easy.

Both players set up the proportion $\frac{6}{2} = \frac{?}{4}$ and solve for the unknown.

Player 1 correctly answers 12 and earns 12 points.

Roles reverse and play continues with Player 2.

*Remember – There are different ways to set up equivalent ratios. Player 1 could have used several different setups still keeping the 2 to 4 relationship.

Unidad 3 Lección 1 – Seguimiento

Instrucciones del juego de Relaciones Ridículas

Materiales:

- juego de dominós (con los "ceros" en una pila separada)
- tabla de multiplicar de 12x12 (opcional)
- Hoja de registro de Relaciones Ridículas de **BLM**

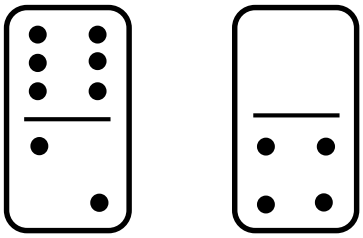
Procedimiento:

El objetivo del juego es resolver correctamente para un valor desconocido en una situación de relación equivalente para ganar puntos y tener la puntuación más alta cuando termine la clase.

- Separa todos los dominós con "ceros" en una pila diferente. Los "ceros" representan los valores desconocidos. Coloca los dominós boca abajo en una sola capa entre los jugadores. (Debe haber dos pilas distintas).
- El jugador 1 elige un dominó de cada pila y los acomoda para crear una ecuación de relación equivalente (proporción). El dominó de la primera pila representa la relación conocida. El segundo dominó representa la relación con el valor desconocido. (Busca relaciones sencillas y números compatibles para ayudarte a elegir una configuración).
- El jugador 1 resuelve para el valor desconocido en BLM. El jugador 2 usa papel borrador para verificar la respuesta.
  Correcto: La solución para el valor desconocido representa el número de puntos ganados.
  Incorrecto: El jugador recibe un punto (por su esfuerzo).
- El turno pasa al jugador 2. Repite el proceso.
- ¡Quien tenga más puntos al final de la clase es el ganador!

Ejemplo:

El jugador 1 elige los dominós 2:6 y cero:4



El jugador 1 elige esta proporción porque 2 y 4 son compatibles con un factor de escala de (x2) o el doble. 6 a 4 no sería tan fácil.

Ambos jugadores establecen la proporción $\frac{6}{2} = \frac{?}{4}$ y resuelven para el valor desconocido.

El jugador 1 responde correctamente 12 para ganar 12 puntos.

Los papeles se invierten y el juego continúa con el jugador 2.

*Recuerda – Hay diferentes maneras de configurar relaciones equivalentes. El jugador 1 podría haber usado varias configuraciones diferentes conservando la relación de 2 a 4.

Unit 3 Lessons 1 – Follow-up
One per partner pair

Ridiculous Ratios Record Sheet

Record work on this handout while playing game.

	Player 1 work	points	Player 2 work	points
Turn 1				
Turn 2				
Turn 3				
Turn 4				
Turn 5				
Turn 6				
Turn 7				
Turn 8				
Turn 9				
Turn 10				
Total Points				

Unit 3 Lessons 1-3 – Follow-up
One per student

Recursive Review Problems

Solve the recursive review problems using any strategy of your choice.

Unit 3 Lesson 1
Phillip vacuum sealed 24.5 lbs. of deer meat on Wednesday, 52.25 lbs. on Thursday, and 78.09 on Friday. What was the total weight in deer meat after Friday?

Unit 3 Lesson 2
There are 10 dimes in one dollar. Which proportion could be used to find how many dimes there are in 5 dollars? **Hint – Label the ratios.*

A. $\frac{10}{1} = \frac{5}{x}$

B. $\frac{1}{10} = \frac{x}{5}$

C. $\frac{10}{1} = \frac{x}{5}$

D. $\frac{5}{1} = \frac{10}{x}$

Unit 3 Lesson 3
How many green pebbles does Taylor need to mix with the 18 red pebbles if the art project directions said she was supposed to use 7 green to every 2 red?

Unidad 3 Lecciones 1-3 – Seguimiento

Problemas de repaso recursivo

Resuelve los problemas de repaso recursivo usando cualquier estrategia que elijas.

Unidad 3 Lección 1
Phillip selló al vacío 24.5 libras de carne de ciervo el miércoles, 52.25 libras el jueves, y 78.09 el viernes. ¿Cuál era el peso total de la carne de ciervo después del viernes?

Unidad 3 Lección 2
Hay 10 monedas de 10 centavos en un dólar. ¿Qué proporción podría usarse para encontrar cuántas monedas de 10 centavos hay en 5 dólares? **Pista - Etiqueta las relaciones.*

A. $\frac{10}{1} = \frac{5}{x}$

B. $\frac{1}{10} = \frac{x}{5}$

C. $\frac{10}{1} = \frac{x}{5}$

D. $\frac{5}{1} = \frac{10}{x}$

Unidad 3 Lección 3
¿Cuántas piedritas verdes necesita mezclar Taylor con las 18 piedritas rojas si las instrucciones del proyecto de arte dicen que debía usar 7 verdes por cada 2 rojas?

Materials
- 1 large dill pickle
- 1 plastic knife
- 3 paper dessert plates
- 3 paper towels

All items above per group of 3
- **BLM** Dill Pickle-Snack Fractions
- **BLM** Dill Pickle-Snack Fractions Teacher Guide

Math Vocabulary
fraction
ratio
percent
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
millrace
trough
cauterize
perilous
reverberated
impetus

Unit 3, Lesson 1 — Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents.
- Convert between fractions, decimals, and percents.
- Estimate to find solutions to problems involving fractions, decimals, and percents.

Language Objectives
- Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.

Snack Fractions
The Snack Fraction activities for this unit will focus on combining fractional parts and dividing into thirds. This means they will work in groups of three. A Teacher Guide for the BLM is provided.

QUESTIONS
- What is the whole in this situation?
- How do I break this up into equal shares?
- What does that fraction represent?
- Does this fraction have an easily calculated decimal equivalent?
- How can you find the decimal of this fraction?

Once the activity is complete, let them enjoy their snack! *(If today's portion is too small, you may give them an additional pickle to eat.)*

Snack Fraction Journal Writing: BLM Dill Pickle-Snack Fractions
Explain why three-thirds doesn't have a decimal of 0.99 and a percent of 99%.

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 3 Lesson 1 – Snack Fractions
One per student

Dill Pickle – Snack Fractions

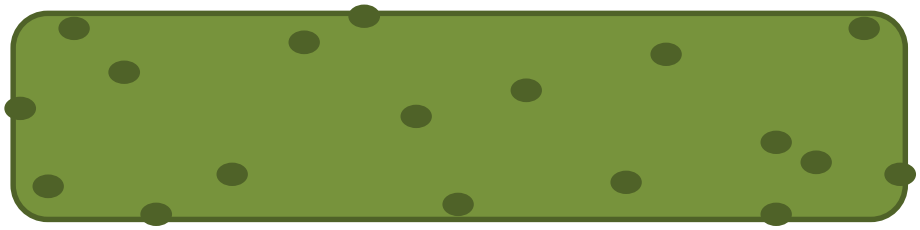
Divide the snack equally between the THREE of you. Work with your group to solve the problems.

1. What fraction represents your portion of the dill pickle out of the whole?
   word _____ fraction _____
   decimal _____ percent _____

2. What fraction represents your portion and one partner out of the whole?
   word _____ fraction _____
   decimal _____ percent _____

3. What fraction represents your portion and two partners out of the whole?
   word _____ fraction _____
   decimal _____ percent _____

4. Using the picture, represent your portion when shared between you and your two partners.

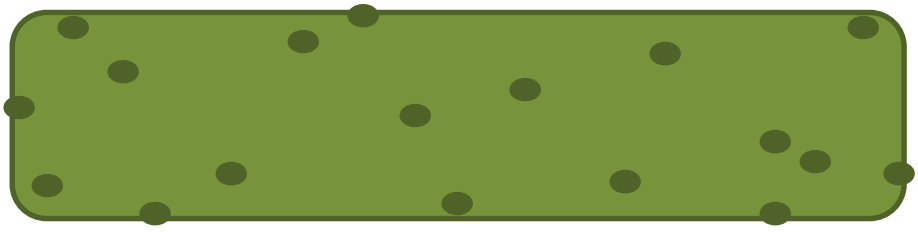


Now pretend there are six of you sharing the whole snack.

5. What fraction represents your portion and one partner out of the whole?
   word _____ fraction _____

6. What fraction represents your portion and two other partners out of the whole?
   word _____ fraction _____
   decimal _____ percent _____

7. Using the picture, prove that $\frac{2}{6}$ is equivalent to $\frac{1}{3}$.



Unit 3 Lesson 1 – Snack Fractions
One per student

Dill Pickle – Snack Fractions

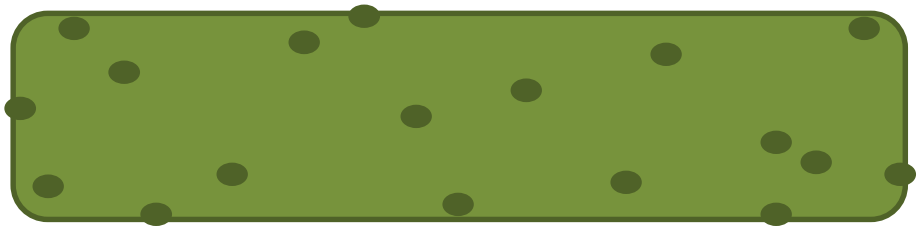
Divide el refrigerio de manera equitativa entre ustedes TRES. Colabora con tu grupo para resolver los problemas.

1. ¿Qué fracción representa tu porción del pepinillo respecto al entero?
   palabras _____ fracción _____
   decimal _____ porcentaje _____

2. ¿Qué fracción representa tu porción del pepinillo y un compañero respecto al entero?
   palabras _____ fracción _____
   decimal _____ porcentaje _____

3. Qué fracción representa tu porción del pepinillo y dos compañero respecto al entero?
   palabras _____ fracción _____
   decimal _____ porcentaje _____

4. Usando el dibujo, representa tu porción al compartirla entre ti y tus dos compañeros.

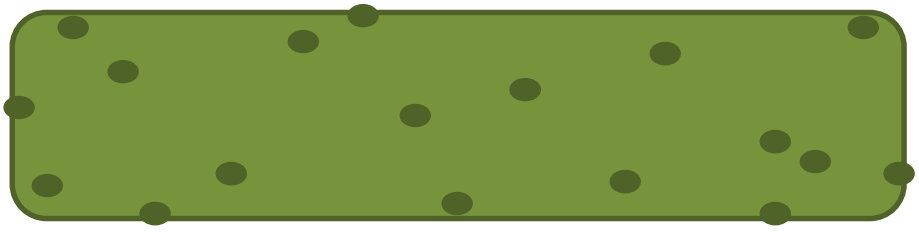


Ahora imagina que hay seis compartiendo el refrigerio entero.

5. ¿Qué fracción representa tu porción del pepinillo y un compañero respecto al entero?
   palabras _____ fracción _____

6. Qué fracción representa tu porción del pepinillo y dos compañero respecto al entero?
   palabras _____ fracción _____
   decimal _____ porcentaje _____

7. Usando el dibujo, prueba que $\frac{2}{6}$ es equivalente a $\frac{1}{3}$.



Unit 3 Lesson 1 – Snack Fractions
Teacher Guide

Dill Pickle – Snack Fractions Teacher Guide

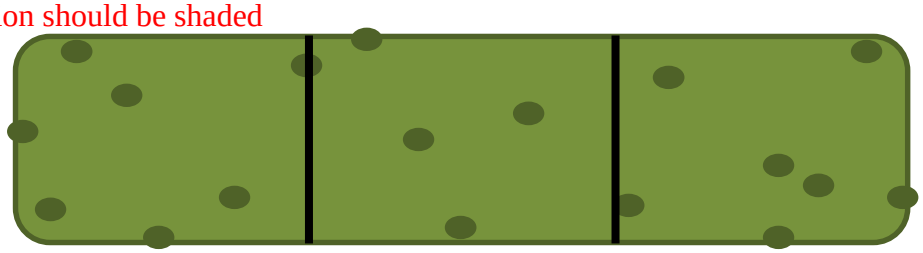
Divide the snack equally between the THREE of you. Work with your group to solve the problems.

1. What fraction represents your portion of the dill pickle out of the whole?
   word one-third fraction $\frac{1}{3}$
   decimal 0.33 percent 33%

2. What fraction represents your portion and one partner out of the whole?
   word two-thirds fraction $\frac{2}{3}$
   decimal 0.66 percent 66%

3. What fraction represents your portion and two partners out of the whole?
   word three-thirds fraction $\frac{3}{3}$
   decimal 1.0 percent 100%

4. Using the picture, represent your portion when shared between you and your two partners.
   one portion should be shaded

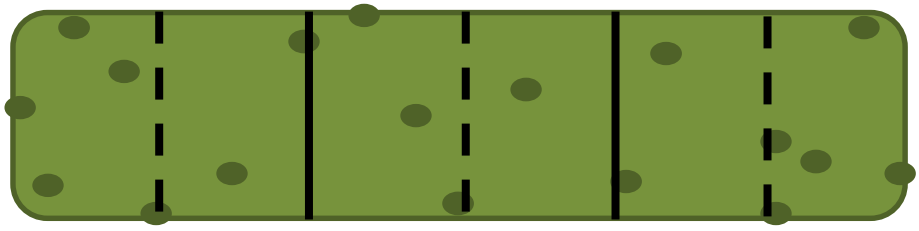


Now pretend there are six of you sharing the whole snack.

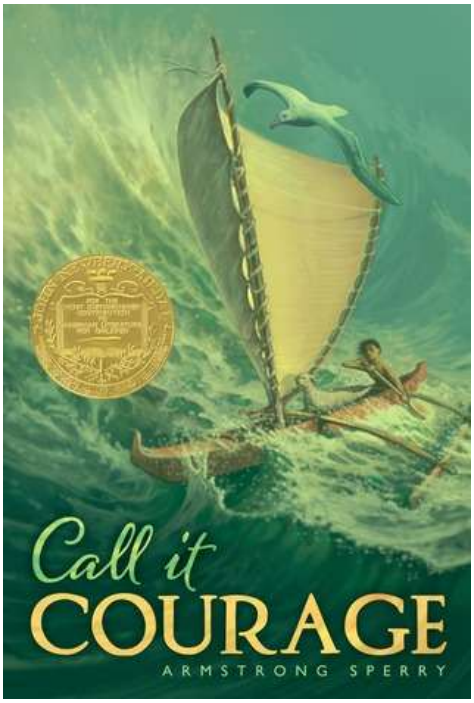
5. What fraction represents your portion and one partner out of the whole?
   word _____ fraction _____

6. What fraction represents your portion and two other partners out of the whole?
   word _____ fraction _____
   decimal _____ percent _____

7. Using the picture, prove that $\frac{2}{6}$ is equivalent to $\frac{1}{3}$. two-sixths shaded equals one-third



Unit 3 Lesson 1 – Family Fun



Dear _____,

We read ***Call it Courage*** by Armstrong Sperry in class today.

The math concepts we explored in our lesson because of this book were…

_____

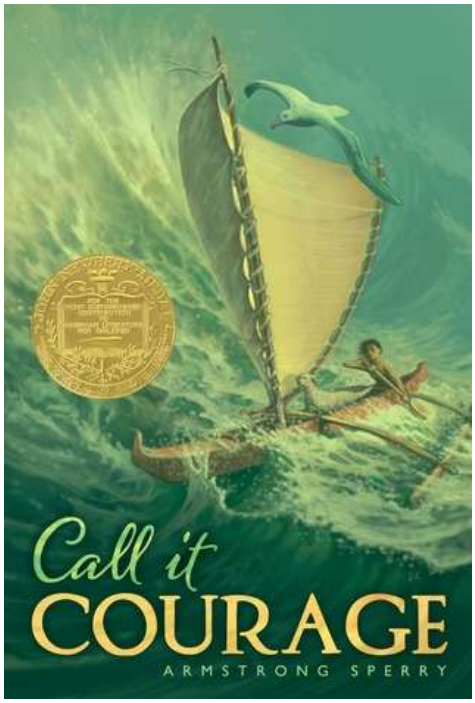
_____

_____

Sincerely,

_____

Unit 3 Lesson 1 – Family Fun



Querido_____,

Leimos ***Call it Courage*** por Armstrong Sperry en la clase hoy.

Los conceptos matematicos que estudiamos en la leccion relacionados al libro fueron…

_____

_____

_____

Atentamente,

_____

Materials
- **BLM** Moai Height Conversion-Measurement Lab Record Sheet
- **BLM** Moai Height Conversion-Measurement Lab Record Sheet Teacher Guide
- **BLM** Solve It! Problem 3
- **BLM** Fraction Action and *X* Marks the Spot
- **BLM** Lessons 1-3 CGI *Call it Courage*

Math Objectives
- Solve problems using a measurement tool and calculating measurements.
- Model and solve multistep word problems.
- Solve problems involving fractions, ratios, and proportions.
- Solve for a variable.
- Compose and decompose numbers.

Language Objectives
- Speak to partners, teacher, and class using vocabulary.
- Discuss problem solving process and strategies.

Math Vocabulary
fraction
ratio
percent
scale factor (covariant)
constant of proportionality
(invariant)

Literature Vocabulary
[add here]

Assessed TEKS for this Unit
- 5th – 5.3H*, 5.3K*
- 6th – 6.3A, 6.5B*, 6.3B, 6.3C

**denotes Revised 2014 TEKS*

ELPS (*English Language Proficiency Standard*)
2D, 2E, 2H, 3B, 3D, 3H, 4C

CCRS (*College and Career*

Unit 3, Lesson 2 — Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post-assessment. They are not optional.

ESSENTIAL

Measurement Lab
- Lesson 1 – *Outrigger Conversion* (6th assessment items 1,3,6)
- **Lesson 2 – Moai Height Conversion (6th assessment item 1,3,6)**
- Lesson 3 – Moai Weight Conversion (6th assessment item 1,3,6)

Lesson 2 Materials
None for this activity

Lesson 2 Student Groups
Students will continue to convert between units of measure within the customary measurement system using a ratio table. They will be familiar with the way the ratio table works from previous units and Lesson 1. A Teacher's Guide is provided for the BLM.

1) Students answer questions on BLM using a ratio table.

Solve It! Multi-step problem solving
- Lesson 1 – *pairs, 2-step* (5th assessment item 4,5)
- **Lesson 2 – pairs, 2-step (6th assessment item 4)**
- Lesson 3 – independent, 2-step (6th assessment item 7)

Fraction Action
- Lesson 1 – *(5th assessment item 1,2,3)*
- **Lesson 2 – (5th assessment item 1,2,3)**
- Lesson 3 – (5th assessment item 1,2,3)

***X* Marks the Spot**
- Lesson 1 – *(6th assessment item 8)*
- **Lesson 2 – (5th assessment item 6)**
- Lesson 3 – (5th assessment item 6)

CGI
- Lesson 1 – Part-Part-Whole (5th assessment item 4)
- **Lesson 2 – Compare Referent Unknown (5th assessment item 5)**
- Lesson 3 – Price Partitive Division (6th assessment item 6)

CROSS-CURRICULAR I.B.2., I.C.1., I.C.2., I.C.3., II.B.1., ELA II.B.1., II.B.3., III.B.1., III.B.2., IV.A.3., IV.B.1. MATH I.B.1., II.B.1., II.C.1., IV.B.1., IV.B.2., VI.C.2., VIII.A.2., VIII.A.2., VIII.A.3.	**Unit 3, Lesson 2** **Grades 5-6** **Daily Routine** - continued **----------** **The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.** **----------** **OPTIONAL** **Target Number** • Lesson 1 – *Target Number 25* • **Lesson 2 – Target Number 50** • Lesson 3 – Target Number 75 **Money Matters** (*If you have a full program and wish to use this optional activity, you will find BLMs and Explanations on MAS Space.)*

Unit 3 Lesson 2 – Daily Routines – Measurement Lab
One per student

Moai Height Conversion – Measurement Lab Record Sheet

During the Classroom Lesson you will continue reading the book, ***Call it Courage*** by Armstrong Sperry, which will introduce you to a giant statue, much like a tiki or the Moai of Easter Island (shown in picture).

Task:

- Work with your partner or group to convert the Moai height measurement.
- Find a group that solved it differently and follow directions for #2.

1. One of the tallest Moai on Easter Island that made it to its position on the coast was measured to be 33 feet high. Use a ratio table to convert that measurement into yards.

   What related ratio do you know?

   What ratio are you finding?

   Label the ratio table and begin cloning until you find the measurement you're looking for. You will have more than enough columns in the given ratio table to solve this problem.

labels	**known**						**unknown**

2. Find a group that solved their ratio table differently, copy their table below, and discuss comparisons. How were your tables the same? Different? Did both groups arrive at the same answer?

labels	**known**						**unknown**

Students may want to mark off the yardage on a football field to gain perspective of the actual height of some of the Moai.

Unit 3 Lesson 2 – Daily Routines – Measurement Lab
One per student

Conversión de altura del Moai - Hoja de registro del laboratorio de medición

Durante la lección en el salón, seguirás leyendo el libro *Call it Courage* por Armstrong Sperry que te presentará una estatua gigante, muy parecida a un tiki o a los Moai de la Isla de Pascua (mostrado en la figura).

Tarea:

- Colabora con tu compañero o grupo para convertir la medida de la altura del Moai.
- Encuentra un grupo que lo haya resuelto de manera distinta y sigue las instrucciones para el #2.

3. Uno de los Moai más altos de la Isla de Pascua que llegó a su posición en la costa midió 33 pies de alto. Usa una tabla de relaciones (razones) para convertir esta medida a tardas.

   ¿Qué razón similar conoces?

   ¿Qué razón estás encontrando?

   Etiqueta la tabla de relaciones y empieza a clonar hasta que encuentres la medida que estás buscando. Tendrás columnas más que suficientes en la tabla de relaciones proporcionada para resolver este problema.

etiquetas	**conocido**						**desconocido**

4. Encuentra un grupo que haya solucionado su tabla de relaciones de manera diferente, copia su tabla abajo y hablen sobre comparaciones. ¿En qué se parecían sus tablas? ¿Y en qué eran diferentes? ¿Los dos grupos llegaron a la misma respuesta?

etiquetas	**conocido**						**desconocido**

Los estudiantes quizá quieran marcar las yardas en un campo de fútbol para poner en perspectiva la altura real de algunos de los Moai.

Unit 3 Lesson 2 – Daily Routines – Measurement Lab
Teacher copy

Moai Height Conversion – Measurement Lab Record Sheet Teacher Guide

During the Classroom Lesson you will continue reading the book, ***Call it Courage*** by Armstrong Sperry, which will introduce you to a giant statue, much like a tiki or the Moai of Easter Island (shown in picture).

Task:

- Work with your partner or group to convert the Moai height measurement.
- Find a group that solved it differently and follow directions for #2.

5. One of the tallest Moai on Easter Island that made it to its position on the coast was measured to be 33 feet high. Use a ratio table to convert that measurement into yards.

   What related ratio do you know? 3 feet: 1 yard

   What ratio are you finding? 33 feet: ??? yards

   Label the ratio table and begin cloning until you find the measurement you're looking for. You will have more than enough columns in the given ratio table to solve this problem. There are several ways to solve this problem. Answers will vary.

labels	known	double 3:1	double 6:2	double 12:4	(x10) 3:1		unknown
feet	3 ft.	6 ft.	12 ft.	24 ft.	30 ft.		33 ft.
yards	1 yd.	2 yds.	4 yds.	8 yds.	10 yds.		11 yds.

1. Find a group that solved their ratio table differently, copy their table below, and discuss comparisons. How were your tables the same? Different? Did both groups arrive at the same answer?

labels	known	x10					unknown
feet	3 ft.	30 ft.					33 ft.
yards	1 yd.	10 yds.					11 yds.

Unit 3 Lesson 2 – Daily Routines – Solve It! (pairs) **5-6**
1 per partner pair

Problem 3:
Jennifer charged a 20% service tax in her alteration shop for wedding dresses because they usually took several days to complete. How much would the total bill be on a wedding dress if the alterations cost $125.00?

Step 1 – Name:	Verification – Name:
Step 2 – Name:	Verification – Name:
Final Solution – Name:	Verification – Name:

Unit 3 Lesson 2 – Daily Routines – Solve It! (pairs) **5-6**
1 per partner pair

Problema 3:
Jennifer cobró un cargo por servicio de 20% en su tienda cuando hacía modificaciones para vestidos de novia porque normalmente tardaba varios días en terminarlos. ¿Cuánto sería el total de una cuenta para un vestido de novia si las modificaciones costaron $125.00?

Paso 1 – Nombre:	Verificación – Nombre:
Paso 2 – Nombre:	Verificación – Nombre:
Solución final: Nombre	Verificación – Nombre:

Unit 3 Lesson 2 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

$$\frac{1}{2} + \frac{3}{4} + \frac{3}{8} = ???$$

X Marks the Spot

Solve for x.

$$5\frac{3}{4} + 3.5 = x$$

Materials
- **BLM Vocabulary Chart 1 for each student**
- **1- 11 x 17 plain paper for each pair of students**
- **Small sticky notes**

Literature Selection
Call it Courage
by Armstrong Sperry

Math Vocabulary
fraction
ratio
percent
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
millrace
trough
cauterize
perilous
reverberated
impetus

Teacher Note

Sticky note example for unfamiliar word: (convulsively)
His fingers gripped the paddle convulsively.

ELPS (*English Language Proficiency Standard*)
1E, 1F, 2D, 3C, 3E, 4D, 4G, 4I, 4J

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.C.2., I.C.3., II.A.2.
ELA II.A.1., II.A.3., II.A.4., II.B.1., II.D.2., III.B.2.

Unit 3, Lesson 2 — Grades 5-6

Classroom Lesson

Every day teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

Math Objectives:
- Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models.
- Represent ratios and percents with concrete models, fractions, and decimals.

Language Objectives:
- Determine or clarify the meaning of unfamiliar or multiple meaning words using context clues.
- Describe events that advance the story, explaining how each event foreshadows future events.
- Make inferences and draw conclusions about the structure and elements of fiction and provide evidence from text to support understanding.

BEFORE READING
Building Background – Vocabulary & Literature
Distribute **BLM vocabulary chart** to students.
Ask, "Which of our vocabulary words did we read in our story yesterday?" *(millrace and trough)* Allow students to respond.

Say, "Great! Today we are going to add to our background knowledge for these two words and other key vocabulary words. This way when we read them in the story we will have a vivid mind movie for what the author is describing."

Guide students in writing the vocabulary words in the first column of the chart.

Say, "Read the first word. Think of a simple picture to represent the first word. Draw it underneath the word."

Utilize the teacher copy of **BLM Vocabulary Illustrations** if needed for suggestions.

Ask, "How many times does your mouth open when you say millrace?" *(2)* Allow for responses.

Say, "That means there are two syllables in the word *millrace*. Let's write the word as we would pronounce it."

Model on the board writing *mill-race*.

Ask, "What part of speech is *millrace*?" Turn to your neighbor and tell them what you think and why.

Say, "Millrace is a noun because it is the name of a thing or object. Let's write noun under the pronunciation. Think of what a millrace is and where we would locate or find one. Turn to your neighbor and brainstorm a simple definition for the meaning of a millrace. Give thumbs up when you are ready."

Collaboratively write a simple definition for millrace in the next column.
Say, "The final column is for a sentence or a connection you can make to the story. Rewrite the sentence from the story containing millrace or write your own sentence using millrace. Then, read your sentence to your neighbor."

Continue following the same framework for *trough*. Fill in all boxes for trough. The chart will be completed tomorrow BEFORE READING for the other vocabulary words.

Guide students' attention to the vocabulary word cards. Reread the cards as a class for one minute as you randomly point to the word cards. Speed the pace up for reading the cards during the minute.

Say, "There may still be words that we get stuck on or not sure what their meaning is or if we are even reading the words correctly. I want you to use the strategy we used in lesson 1 for these words. The sticky note is to mark the words you are not sure of, so that later we can revisit the words and help clarify their meaning if needed. We will use this strategy through the entire book."

Prior to class…Have the students illustrations from lesson 1 pulled from the wall. Leave the index cards for the illustrations on the wall or reorganize in another location. Events are in order. Randomly hand out the illustrations to partners, attempting to not give the illustration to its creator. Direct students to review the illustrations and discuss which event it matches. Students then match the illustration to the event listed and explain the whys behind the match.

Unit 3, Lesson 2 — Grades 5-6

Classroom Lesson - continued

Ask, **"**What do you think will happen to Mafatu on the island? Why do you think this?" Take a vote on the predictions.
Say, "Let's read and find out which prediction(s) are correct?"

DURING READING
Comprehensible Input - Vocabulary & Literature
Read pp. 35-75 (stopping at "…humble with gratitude") chapter 3 and part of chapter 4:
Begin reading the story as a whole class, alternate readers, and read you-read portions to the students as well. The manner in which the book is read will depend on the level of readers in your class, their decoding ability, language proficiencies, and the time allotted for oral reading.
As you read portions of the text, model comprehension monitoring strategies to help readers become aware of whether they are understanding the text they read.
As you model good reading, intentionally reveal a roadblock to understanding the text:

- Identify the difficulty *(misread word, unknown word, section that doesn't make sense).*
- Use think-aloud procedures that highlight where and when the difficulty began.
- Restate what was read.
- Looking back through the text *(rereading).*
- Looking forward, reading ahead to find information that might help.

During the reading of this book, you will stop periodically throughout the reading for each day to contemplate predictions about what might follow logically in the next portion or chapter of the book. It is important for the class to revisit predictions made after sections of the book are read. Students will understand then how predictions impact comprehension. Students can vote on which predictions are most likely and explain why as the reading continues and the plot unfolds.

Record major events that occur within the two categories: **Could Happen/Could Not Happen.** The events are 'major' if it is an event that directly affects the main character and the plot of the story. Ensure that students continue to consecutively number their events. Randomly select five-six events *(depending on number of students in your class)* for a partnered activity after reading.

Stop at the end of chapters to discuss sticky marked words. Discuss with the group context clues to help with clarification of sticky words. Guide students in using the same steps you modeled while clarifying when you hit a roadblock while reading.

Unit 3, Lesson 2 — Grades 5-6

Classroom Lesson - continued

After completing page 75…
Say, "I wonder what courageous act Mafatu will do next. I wonder if the eaters-of-men will be back."
Ask, "What do you wonder?"

AFTER READING
Practice and Application – Vocabulary & Literature
Guide students in rereading with partner the events listed under both categories **Could Happen/Could Not Happen**. Ensure that students have their events numbered.

Say, **"**We are going to continue the illustration of the authors work. You will number off 1-5 *(or 1- whatever number to equal each student having one partner)*.

Using numbered heads together *(#ones together, #twos together, etc.)*, students create the illustration for their event. Students problem solve how they will both illustrate on the same paper. Afterwards, write the event on the index card to be placed under the picture.

Pictures can be placed on a wall of the classroom and a gallery walk can be conducted between classes.

Students will be adding to the **Could Happen/Could Not Happen** pages through lesson 3. Illustrations can be left on the wall until the end of lesson 3.

ELPS (*English Language Proficiency Standard*)
1E, 2E, 2G, 3B, 3D, 3F, 4C, 4E, 4H

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.C.1., I.C.2., II.D.1.
MATH I.B.1., II.B.1., II.C.1., IV.B.1., VI.B.4.

Unit 3, Lesson 2 — Grades 5-6
Classroom Lesson – continued

Transition to Math

Review percent concepts. Students can use the strip diagram, equivalent ratio setup, and/or mental math strategies to solve percentage problems *(interest)* in this lesson. Please write these problems on the board or projector and work through them with the class.

Problem #1

A credit card company charges 30% interest on purchases made each month. If the bill was $455.00, how much interest would be charged?

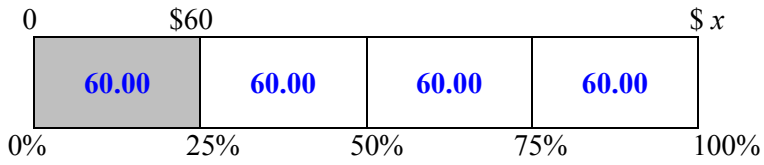
10% = $45.50. Three groups of 10% = $136.50 interest

Problem #2

Interest charged on layaway items was 25%. If the interest alone was $60.00, how much was the cost of the items before interest?

$60 = one-fourth of the total cost because 25% is one-fourth. To find total cost, multiply $60 times 4. Since this is a different structure than they're used to it will challenge them to really apply everything they know about percents and bar models. Bar model is shown below if they choose to use it as a strategy. The procedure is the same. They must fill in what information they know. This example lends itself well to being sectioned off into four "chunks" of 25%.

Bar Model:



Problem #3

Loan Shark USA charges members with bad credit 45% interest on their loan amount. If $500.00 was borrowed, how much will need to be paid back after interest is included?

10% = $50.00. Times 4 = $200.00. Half of a 10% = $25.00. Interest = $225.00. Add it to the loan amount = $725.00

Objectives

Read through the math and language objectives, making sure that students understand how they accomplished each.

Materials
- **BLM** Bamboo Fish Trap

Math Vocabulary
fraction
ratio
percent
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
millrace
trough
cauterize
perilous
reverberated
impetus

Teacher Note
The Transition to Math was utilized as a review piece for today. The TV Lesson will start a new concept unrelated to the Transition.

Teacher Note
It is important that students label their ratios in order to keep them consistent. Monitor class to make sure they are labeling.

ELPS (*English Language Proficiency Standard*)
1F, 1G, 2F, 2G, 3D, 3H, 4E, 5B, 5C

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.1., I.C.2., I.E.1., II.B.2.
ELA I.A.2., II.A.2., II.A.3., III.B.2., IV.A.3.
MATH I.B.1., I.C.1., II.B.1., IV.B.1., VIII.A.1., VIII.A.3., VIII.A.4.IX.A.2.

Unit 3, Lesson 2 — Grades 5-6

TV Lesson

Math Objectives:
- Use ratios to describe proportional situations.
- Represent ratios and percents with concrete models, fractions, and decimals.
- Use ratios to make predictions in proportional situations.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Building Background
See Teacher Note in sidebar.
Students should be getting comfortable with the solution strategies for finding equivalent ratios or unknowns in ratio situations. The TV Lessons in this unit will continue to strengthen those skills and strategies. However, the numbers used in these ratios are not as noticeably compatible. The TV Teacher will show students how to think in "groups of" instead of reverting to the cross-multiply strategy.

The problem situations in this lesson refer to the bamboo fish trap Mafatu builds on the new island. If students did not reach p.60 in ***Call it Courage***, continue with the lesson and explain that they will soon read about the fish trap. It is not an integral part of the story, so the adventure will not be tarnished by mentioning it before it is read.

Comprehensible Input
In Lesson 1 students were exposed to the many ways they can set up ratio proportions and still arrive at the same answer. However, students are encouraged to follow the same setup as the TV teacher in this lesson to better understand the multiplicative relationships, as they are the focus. The numbers used in the problem situations are purposely set up to practice thinking in "groups of" and parts of groups.

Bamboo Fish Trap Information
The picture on the BLM shows 4 rock-cods, 6 mullets, 8 blue crabs, and 9 crayfish. Students will use this information to answer the questions.

Problem #1
Known ratio: 8 crabs: 6 mullets
Unknown ratio: ? crabs: 15 mullets

$$\frac{\textbf{8 crab}}{\textbf{6 mullet}} = \frac{\textbf{? crab}}{\textbf{15 mullet}}$$

Unit 3, Lesson 2 **Grades 5-6**

TV Lesson - continued

Finding a scale factor *(covariant)* or constant of proportionality *(invariant)* relationship does not appear easy with these numbers. This is when students can think in equal groups and partials of those groups before resorting to the cross-multiply strategy. Multiplication is the addition of equal groups, even if those groups are partials.

Covariant:

$$\frac{\text{8 crab}}{\text{6 mullet}} = \frac{\text{? crab}}{\text{15 mullet}}$$

x 2.5

"Think about how many groups of six you would need to make 15?"
"Two groups of six makes…?" *(12)*
"But three groups of six makes…?" *(18, too much)*
"Where does that leave 15?" *(right in the middle)*
"If we use two groups of six, how many more mullet do I need to get to 15?" *(3)*
"How does three relate to the group of six?" *(It is half a group of six.)*
This is how we arrive at the scale factor of 2.5. Two and a half groups of six equals 15. Mathematically, that means (2.5 x 6 = 15).

Teacher Note
The calculations in this lesson are intended for mental math. Students are not expected to multiply by decimals and fractions using the traditional algorithm. They are to focus on thinking in groups and partial groups as per directions in this lesson.

"Now that we know our scale factor, think about what it means to have 2.5 groups of 8?"
"What are two groups of eight?" *(16)*
"What is half a group of eight?" *(4)*
"What is that altogether?" *(20)*
"What does 20 represent?" *(number of crabs caught if 15 mullets were caught)*

Invariant:

$$\times \frac{3}{4} \quad \frac{\text{8 crab}}{\text{6 mullet}} = \frac{\text{? crab}}{\text{15 mullet}}$$

This is more difficult than the covariant. Walk through the same thought process as before. Six and eight are related by two's. In other words, eight is four groups of two and six is three groups of two. Therefore, three-fourths of a group of eight is six, as shown with the pictorial model. Each column represents one-fourth of the rectangle. Mathematically, that means

$\frac{3}{4}$ x 8 = 6.

Problem #2

Known ratio: 4 rock-cods: 6 mullets
Unknown ratio: 14 rock-cods: ? mullets

$$\frac{\textbf{4 rock-cod}}{\textbf{6 mullet}} = \frac{\textbf{14 rock-cod}}{\textbf{? mullet}}$$

Walk through the same process as Problem #1, asking thought-provoking questions.

Covariant:

$$\frac{\textbf{4 rock-cod}}{\textbf{6 mullet}} \overset{\textbf{x 3.5}}{=} \frac{\textbf{14 rock-cod}}{\textbf{? mullet}}$$

Three groups of four is 12, but two more rock-cods are needed to reach 14. Two is half of a group of four. Therefore, three and a half groups of four are needed to make 14. Mathematically, that means 3.5 x 4 = 14.

Apply the covariant to the denominators. 3.5 groups of 6 = ? Three groups of 6 = 18. Half a group of 6 = 3. Total of 21 mullet when 14 rock-cods are caught.

Invariant:

$$\textbf{x 1.5} \quad \frac{\textbf{4 rock-cod}}{\textbf{6 mullet}} = \frac{\textbf{14 rock-cod}}{\textbf{? mullet}}$$

One group of four is four, and a half a group of four is two. Those partials together equal six. Mathematically, that means 1.5 x 4 = 6.

Apply the invariant to the second ratio. 1.5 groups of 14 is 21 because one group of 14 = 14 and half a group of 14 = 7. Those partials together equal 21. 21 mullet were caught if 14 rock-cod were caught as well.

Problem #3

Known ratio: 6 mullets: 9 crayfish
Unknown ratio: ? mullets: 21 crayfish

$$\frac{\textbf{6 mullet}}{\textbf{9 crayfish}} = \frac{\textbf{? mullet}}{\textbf{21 crayfish}}$$

Walk through the same process as Problem #1, asking thought-provoking questions.

Unit 3, Lesson 2 **Grades 5-6**

TV Lesson - continued

Covariant:

$$\frac{\text{6 mullet}}{\text{9 crayfish}} = \frac{\text{? mullet}}{\text{21 crayfish}}$$

$\times 2\frac{1}{3}$

Two groups of nine equals 18, but three more crayfish are needed to make 21. Three is related to nine by a third. In other words, three is one-third of a group of nine. Combine the partials, which means two and one-third groups of nine equals twenty-one. Mathematically, $2\frac{1}{3} \times 9 = 21$.

Apply the scale factor to the numerators. Two groups of six = 12 and one-third of a group of six = two. Combine partials to get 14. 14 mullets would have been caught if Mafatu also caught 21 crayfish.

Invariant:

$$\times 1.5 \quad \frac{\text{6 mullet}}{\text{9 crayfish}} = \frac{\text{? mullet}}{\text{21 crayfish}}$$

It will take one and a half groups of six to make nine. Apply the invariant to the second ratio.

"One and a half groups of WHAT will equal 21?" 21 represents one whole group and a half of a group of something. Instead of thinking about a whole and a half, it can convert into three equal halves. half + half + half = one and a half. If 21 is "chunked" into three equal parts *(7)* then each part should represent a half of the unknown number. Mathematically, (7 + 7) + 7 = 21. The sevens in parenthesis show the "whole" or unknown. Therefore, 14 mullets were caught in the bamboo trap if Mafatu also caught 21 crayfish.

Pirate's Corner
Use your new found knowledge of groups and answer Captain Portio's challenge question.
"Aaarrrrrggggg…what's five and a half groups of two?"

Objectives:
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 3 Lesson 2 – TV Lesson
One per student

Bamboo Fish Trap

Work with your teacher and peers to complete this activity.

Mafatu noticed he caught about the same number of crayfish, blue crab, small silver mullet fish, and dark rock-cod every time he emptied his bamboo fish trap. His typical catch is shown in the picture. Use it to help answer the following questions.

Rock-cod _____ Mullet _____

Blue Crab _____ Crayfish _____

1. What is the ratio of crab to mullet? _____ At this rate, if Mafatu counted 15 mullets after several catches, how many crabs would he have caught?

2. What is the ratio of rock-cod to mullet? _____ At this rate, if Mafatu counted 14 rock-cods after several catches, how many mullets would he have caught?

3. What is the ratio of mullet to crayfish? _____ At this rate, if Mafatu counted 21 crayfish after several catches, how many mullets would he have caught?

Unidad 3 Lección 2 – Lección TV

Trampa de bambú para peces

Colabora con tu maestro y tus compañeros para completar esta actividad.

Mafatu notó que atrapó casi el mismo número de cangrejos, cangrejos azules, salmonetes plateados y bacalaos oscuros cada vez que vaciaba su trampa de bambú para peces. Su pesca típica se muestra en la figura. Úsala para ayudarte a responder las siguientes preguntas.

Bacalao _____ Salmonete _____

Cangrejo azul _____ Cangrejo _____

1. ¿Cuál es la relación de cangrejo azul a salmonete? _____ Con esta relación, si Mafatu contó 15 salmonetes después de varias pescas, ¿cuántos cangrejos azules habría atrapado?

2. ¿Cuál es la relación de bacalao a salmonete? _____ Con esta relación, si Mafatu contó 14 bacalaos después de varias pescas, ¿cuántos salmonetes habría atrapado?

3. ¿Cuál es la relación de salmonete a cangrejo? _____ Con esta relación, si Mafatu contó 21 cangrejos después de varias pescas, ¿cuántos salmonetes habría atrapado?

Materials
- set of dominoes
- scratch paper
- 12x12 multiplication chart (optional)

All items listed above per partner pair.
- **BLM** Ridiculous Ratios Game Directions (Lesson 1)
- **BLM** Ridiculous Ratios Record Sheet (Lesson 1)

Math Vocabulary
fraction
ratio
percent
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
millrace
trough
cauterize
perilous
reverberated
impetus

ELPS (*English Language Proficiency Standard*)
1G, 2E, 2G, 2H, 3D, 3F, 4F, 5A, 5B

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.C.1., I.C.2., II.B.2.
ELA I.A.1., I.A.2., II.A.2., III.B.1., III.B.2., IV.A.3.
MATH I.B.1., I.C.1., II.B.1., IV.B.1., VIII.A.1., VIII.A.3.

Unit 3, Lesson 2 — Grades 5-6

Follow-up

Math Objectives:
- Use ratios to describe proportional situations.
- Use ratios to make predictions in proportional situations.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

If students did not finish the questions during the TV Lesson they may do so during this time.

Practice and Application
Students will play the game Ridiculous Ratios again. This time, if they apply the strategy of thinking in groups *(from TV Lesson)* they earn 10 extra points when the ratio problem is answered correctly.

QUESTIONS
- Why did you choose to set up your ratios this way?
- What groups did you use for that relationship?
- Were you able to determine the setup based on an easy relationship?

Recursive Review
Please use **BLM** *to answer the Recursive Review questions.*

- There are 10 dimes in one dollar. Which proportion could be used to find how many dimes there are in five dollars? **Hint – Label the ratios.*

A. $\frac{10}{1} = \frac{5}{x}$ **B.** $\frac{1}{10} = \frac{x}{5}$ **C.** $\frac{10}{1} = \frac{x}{5}$ **D.** $\frac{5}{1} = \frac{10}{x}$

Writing Topics

Independent Writing Topic
Students will have a daily writing activity which will incorporate the day's focus math vocabulary.

- **Is it important to know how to calculate both the invariant and covariant relationships in proportional situations? Justify your thinking.**

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Materials
- 3 paper dessert plates
- 3 paper towels
- 6 pieces of beef jerky

All items above per group of 3
- **BLM** Beef Jerky-Snack Fractions
- **BLM** Beef Jerky-Snack Fractions Teacher Guide

Math Vocabulary
fraction
ratio
percent
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
millrace
trough
cauterize
perilous
reverberated
impetus

Unit 3, Lesson 2 — Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents.
- Convert between fractions, decimals, and percents.
- Estimate to find solutions to problems involving fractions, decimals, and percents.

Language Objectives
- Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.

Snack Fractions
The Snack Fraction activities for this unit will focus on combining fractional parts and dividing into thirds. This means they will work in groups of three. A Teacher Guide for the BLM is provided.

The snack for this lesson represents a set model *(group of objects defined as a whole)*. The six pieces of jerky are boxed in to show that it is considered a whole. **The snack is NOT considered six wholes.**

QUESTIONS
- What is the whole in this situation?
- How do I break this up into equal shares?
- What does that fraction represent?
- Does this fraction have an easily calculated decimal equivalent?
- How can you find the decimal of this fraction?

Once the activity is complete, let them enjoy their beef jerky!

Snack Fraction Journal Writing: BLM Beef Jerky-Snack Fractions
Explain why $\frac{2}{3} + \frac{1}{3} = 1$ whole.

Objectives: Review the objectives with the class, making sure they understand how they achieved each.

Unit 3 Lesson 2 – Snack Fractions
One per student

Beef Jerky – Snack Fractions

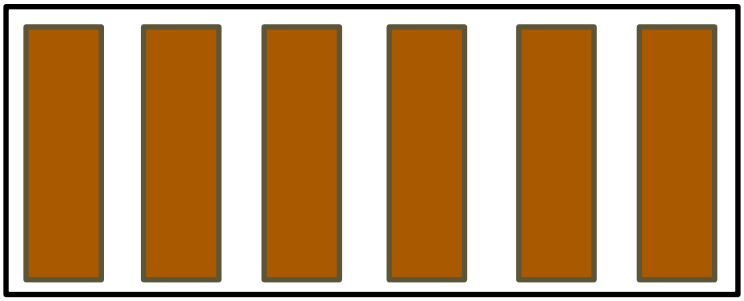
Divide the snack equally between the THREE of you. Work with your group to solve the problems.

1. What fraction represents your portion of the beef jerky out of the whole?
   word _____ fraction _____ = _____
   decimal _____ percent _____

2. What fraction represents your portion and one partner out of the whole?
   word _____ fraction _____ = _____
   decimal _____ percent _____

3. What fraction represents your portion and two partners out of the whole?
   word _____ fraction _____ = _____
   decimal _____ percent _____

4. Using the picture, represent your portion when shared between you and your two partners.

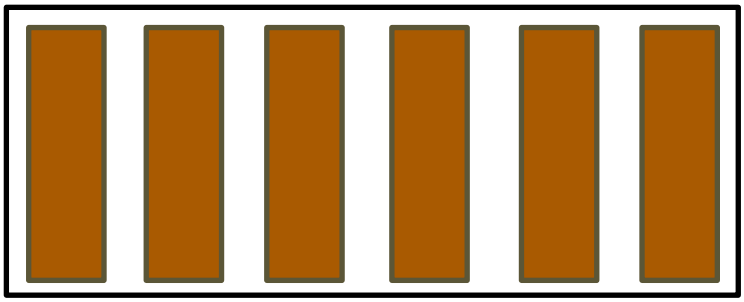


Now pretend there are six of you sharing the whole snack.

5. What fraction represents your portion and one partner out of the whole?
   word _____ fraction _____

6. What fraction represents your portion and two other partners out of the whole?
   word _____ fraction _____ = _____
   decimal _____ percent _____

7. Using the picture, prove that $\frac{2}{6}$ is equivalent to $\frac{1}{3}$.



Unit 3 Lesson 2- Snack Fractions
One per student

Beef Jerky – Snack Fractions

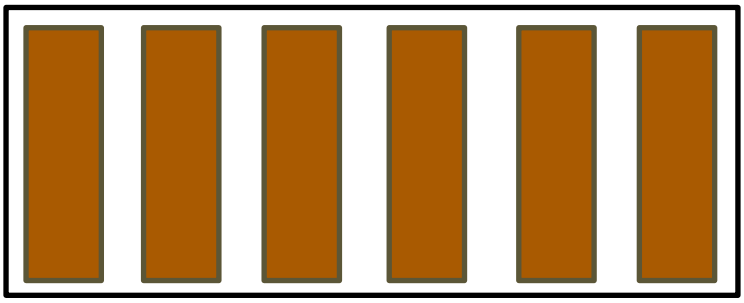
Divide el refrigerio de manera equitativa entre ustedes TRES. Colabora con tu grupo para resolver los problemas.

1. ¿Qué fracción representa tu porción respecto al entero?
   palabras _____ fracción _____= _____
   decimal _____ porcentaje _____

2. ¿Qué fracción representa tu porción y un compañero respecto al entero?
   palabras _____ fracción _____= _____
   decimal _____ porcentaje _____

3. Qué fracción representa tu porción y dos compañero respecto al entero?
   palabras _____ fracción _____= _____
   decimal _____ porcentaje _____

4. Usando el dibujo, representa tu porción al compartirla entre ti y tus dos compañeros.

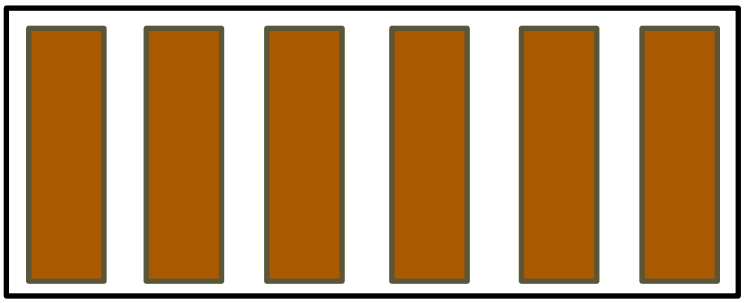


Ahora imagina que hay seis compartiendo el refrigerio entero.

5. ¿Qué fracción representa tu porción y un compañero respecto al entero?
   palabras _____ fracción _____

6. Qué fracción representa tu porción y dos compañero respecto al entero?
   palabras _____ fracción _____= _____
   decimal _____ porcentaje _____

7. Usando el dibujo, prueba que $\frac{2}{6}$ es equivalente a $\frac{1}{3}$.



Unit 3 Lesson 2 - Snack Fractions **KEY**
One per student

Beef Jerky – Snack Fractions

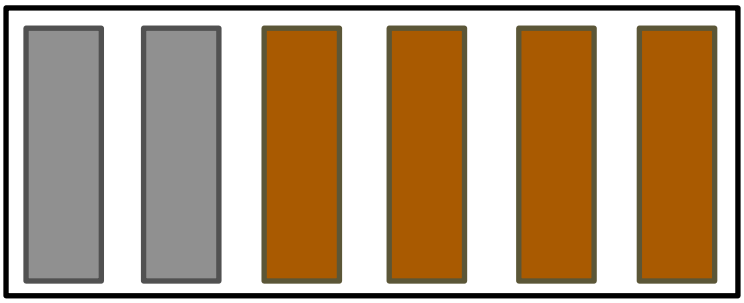
Divide the snack equally between the THREE of you. Work with your group to solve the problems.

8. What fraction represents your portion of the beef jerky out of the whole?
   word two-sixths or one-third fraction $\frac{2}{6} = \frac{1}{3}$
   decimal 0.33 percent 33%

9. What fraction represents your portion and one partner out of the whole?
   word four-sixths or two-thirds fraction $\frac{4}{6} = \frac{2}{3}$
   decimal 0.66 percent 66%

10. What fraction represents your portion and two partners out of the whole?
    word six-sixths or one whole fraction $\frac{6}{6}$ = 1 whole
    decimal 1.0 percent 100%

11. Using the picture, represent your portion when shared between you and your two partners.

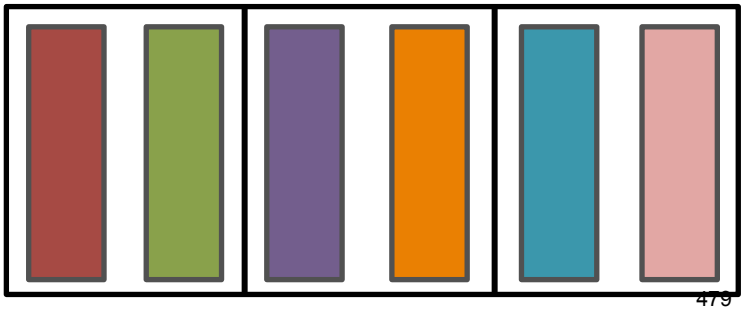


Now pretend there are six of you sharing the whole snack.

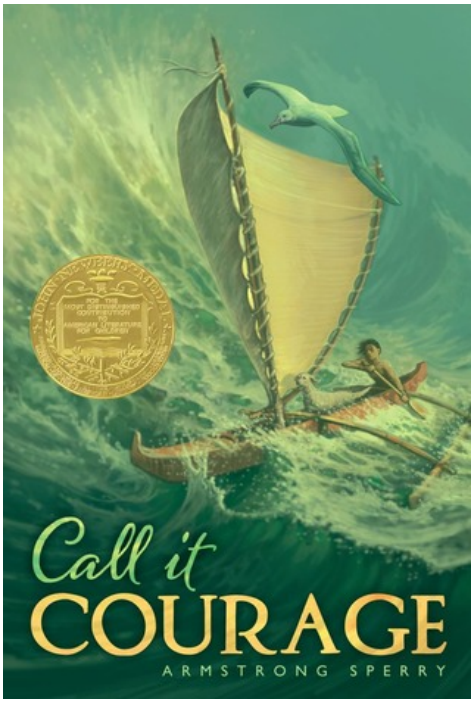
12. What fraction represents your portion and one partner out of the whole?
    word one-sixth fraction $\frac{1}{6}$

13. What fraction represents your portion and two other partners out of the whole?
    word three-sixths fraction $\frac{3}{6} = \frac{1}{2}$
    decimal 0.5 percent 50%

14. Using the picture, prove that $\frac{2}{6}$ is equivalent to $\frac{1}{3}$. Each colored jerky represents $\frac{1}{6}$. Lines show $\frac{1}{3}$.



Unit 3 Lesson 2 – Family Fun



Dear _____,

We continued reading ***Call it Courage*** by Armstrong Sperry in class today.

My favorite part of today's math lesson was…

_____

because…

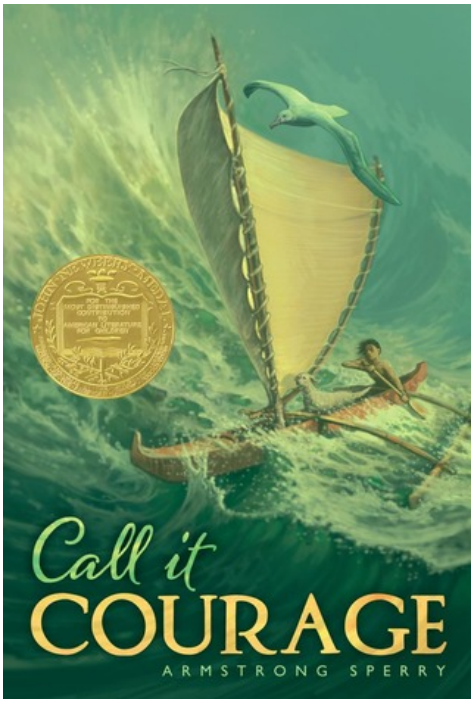
_____

_____

Sincerely,

_____

Unit 3 Lesson 2 – Family Fun



Querido _____,

Seguimos con la lectura de ***Call it Courage*** por Armstrong Sperry en la clase hoy.

Mi parte favorita de la lección de matemáticas hoy fue…

_____

porque…

_____

_____

Atentamente,

_____

Materials
- **BLM** Moai Weight Conversion-Measurement Lab Record Sheet
- **BLM** Moai Weight Conversion-Measurement Lab Record Sheet Teacher Guide
- **BLM** Solve It! Problem 4
- **BLM** Fraction Action and *X* Marks the Spot
- **BLM** Lessons 1-3 CGI *Call it Courage*

Math Objectives
- Solve problems using a measurement tool and calculating measurements.
- Model and solve multistep word problems.
- Solve problems involving fractions, ratios, and proportions.
- Solve for a variable.
- Compose and decompose numbers.

Language Objectives
- Speak to partners, teacher, and class using vocabulary.
- Discuss problem solving process and strategies.

Math Vocabulary
fraction
ratio
percent
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
millrace
trough
cauterize
perilous
reverberated
impetus

Assessed TEKS for this Unit
- 5th – 5.3H*, 5.3K*
- 6th – 6.3A, 6.5B*, 6.3B, 6.3C

**denotes Revised 2014 TEKS*

Unit 3, Lesson 3 Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post-assessment. They are not optional.

ESSENTIAL

Measurement Lab
- Lesson 1 – *Outrigger Conversion* (6th assessment items 1,3,6)
- Lesson 2 – Moai Height Conversion (6th assessment item 1,3,6)
- **Lesson 3 – Moai Weight Conversion (6th assessment item 1,3,6)**

Lesson 3 Materials
None for this activity

Lesson 3 Student Groups
Students will continue to convert between units of measure within the customary measurement system using a ratio table. They will be familiar with the way the ratio table works from previous units and Lesson 1. A Teacher's Guide is provided for the BLM.

1) Students answer questions on BLM using a ratio table.

Solve It! Multi-step problem solving
- Lesson 1 – *pairs, 2-step* (5th assessment item 4,5)
- Lesson 2 – pairs, 2-step (6th assessment item 4)
- **Lesson 3 – independent, 2-step (6th assessment item 7)**

Fraction Action
- Lesson 1 – *(5th assessment item 1,2,3)*
- Lesson 2 – (5th assessment item 1,2,3)
- **Lesson 3 – (5th assessment item 1,2,3)**

***X* Marks the Spot**
- Lesson 1 – *(6th assessment item 8)*
- Lesson 2 – (5th assessment item 6)
- **Lesson 3 – (5th assessment item 6)**

CGI
- Lesson 1 – Part-Part-Whole (5th assessment item 4)
- Lesson 2 – Compare Referent Unknown (5th assessment item 5)
- **Lesson 3 – Price Partitive Division (6th assessment item 6)**

ELPS (*English Language Proficiency Standard*) 2D, 2E, 2H, 3B, 3D, 3H, 4C **CCRS** (*College and Career Readiness Standards)* CROSS-CURRICULAR I.B.2., I.C.1., I.C.2., I.C.3., II.B.1., ELA II.B.1., II.B.3., III.B.1., III.B.2., IV.A.3., IV.B.1. MATH I.B.1., II.B.1., II.C.1., IV.B.1., IV.B.2., VI.C.2., VIII.A.2., VIII.A.2., VIII.A.3.	**Unit 3, Lesson 3** **Grades 5-6** **Daily Routine** - continued  **----------** **The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.** **----------** **OPTIONAL** **Target Number** • Lesson 1 – *Target Number 25* • Lesson 2 – Target Number 50 • **Lesson 3 – Target Number 75** **Money Matters** (*If you have a full program and wish to use this optional activity, you will find BLMs and Explanations on MAS Space.)*

Unit 3 Lesson 3 – Daily Routines – Measurement Lab
One per student

Moai Weight Conversion – Measurement Lab Record Sheet

During the Classroom Lesson you will continue reading the book, ***Call it Courage*** by Armstrong Sperry, which will introduce you to a giant statue, much like a tiki or the Moai of Easter Island (shown in picture).

Task:

- Work with your partner or group to convert the Moai weight measurement.
- Find a group that solved it differently and follow directions for #2.

1. One of the heaviest Moai (if it had been completed) on Easter Island is estimated to be 270 tons! Use a ratio table to convert that measurement into pounds.

   What related ratio do you know?

   What ratio are you finding?

   Label the ratio table and begin cloning until you find the measurement you're looking for. You will have more than enough columns in the given ratio table to solve this problem.

labels	**known**						**unknown**

2. Find a group that solved their ratio table differently, copy their table below, and discuss comparisons. How were your tables the same? Different? Did both groups arrive at the same answer?

labels	**known**						**unknown**

Students may want to research large familiar things/objects like elephants to compare to the Moai to gain perspective of its actual weight.

Unit 3 Lesson 3 – Daily Routines – Measurement Lab
One per student

M Conversión de altura del Moai - Hoja de registro del laboratorio de medición

Durante la lección en el salón, seguirás leyendo el libro *Call it Courage* por Armstrong Sperry que te presentará una estatua gigante, muy parecida a un tiki o a los Moai de la Isla de Pascua (mostrado en la figura).

Tarea:

- Colabora con tu compañero o grupo para convertir la medida de la altura del Moai.
- Encuentra un grupo que lo haya resuelto de manera distinta y sigue las instrucciones para el #2.

3. Uno de los Moai más pesados de la Isla de Pascua (que se ha terminado) se estima a 270 toneladas. Usa una tabla de relaciones (razones) para convertir esta medida a libras.

   ¿Qué razón similar conoces?

   ¿Qué razón estás encontrando?

   Etiqueta la tabla de relaciones y empieza a clonar hasta que encuentres la medida que estás buscando. Tendrás columnas más que suficientes en la tabla de relaciones proporcionada para resolver este problema.

etiquetas	**conocido**						**desconocido**

4. Encuentra un grupo que haya solucionado su tabla de relaciones de manera diferente, copia su tabla abajo y hablen sobre comparaciones. ¿En qué se parecían sus tablas? ¿Y en qué eran diferentes? ¿Los dos grupos llegaron a la misma respuesta?

etiquetas	**conocido**						**desconocido**
labels	**known**						**unknown**

Los estudiantes quizá quieran investigar otros grandes objetos como elefantes para comparar a los Moai para ganar perspectiva.

Unit 3 Lesson 3 – Daily Routines – Measurement Lab **KEY**
One per student

Moai Weight Conversion – Measurement Lab Record Sheet

During the Classroom Lesson you will continue reading the book, ***Call it Courage*** by Armstrong Sperry, which will introduce you to a giant statue, much like a tiki or the Moai of Easter Island (shown in picture).

Task:

- Work with your partner or group to convert the Moai weight measurement.
- Find a group that solved it differently and follow directions for #2.

1. One of the heaviest Moai (if it had been completed) on Easter Island is estimated to be 270 tons! Use a ratio table to convert that measurement into pounds.

   What related ratio do you know? 2000 lbs: 1 ton

   What ratio are you finding? ??? lbs: 270 tons

   Label the ratio table and begin cloning until you find the measurement you're looking for. You will have more than enough columns in the given ratio table to solve this problem. multiply by 10's and 100's. combine partials

labels	known	x70	known x100	double			unknown
pounds	2000 lbs	140,000	200,000	400,000			540,000 lbs
tons	1 ton	70	100	200			270 tons

2. Find a group that solved their ratio table differently, copy their table below, and discuss comparisons. How were your tables the same? Different? Did both groups arrive at the same answer?

labels	known	x10	x10	double	(x7) 10:20,000		unknown
tons	1 ton	10	100	200	70		270 tons
pounds	2000 lbs	20,000	200,000	400,000	140,000		540,000 lbs

Unit 3 Lesson 3 – Daily Routines - Solve It! Problems (individual)
One per student

Problem 4:
Penelope was charged 20% interest on her credit card purchase of $250. Anthony was charged 25% on his purchase of $200. Penelope didn't understand why she paid the same dollar amount for interest as Anthony if her rate was lower. Find each of their interest payments, then explain why she paid the same.

Problem Solution Name:	**Solution Verification** Name:

Unit 3 Lesson 3 – Daily Routines - Solve It! Problems (individual)

One per student

Problema 4:

A Penélope le cobraron 20% de interés sobre su compra con tarjeta de crédito por $250. A Anthony le cobraron 25% en su compra por $200. Penélope no entendía por qué pagó la misma cantidad en dólares por concepto de interés que Anthony, si su tasa era más baja. Encuentra el pago de interés de cada uno, y luego explica por qué ella pagó lo mismo.

Solución del problema Nombre:	**Verificación de la solución** Nombre:

Unit 3 Lesson 3 – Daily Routines - Solve It! Problems (pairs) **5-6**
1 per student

Partner 2 - Problem 5:
Terra was charged 20% interest on her credit card purchase of $350. Jason was charged 25% on his purchase of $280. Terra didn't' understand why she paid the same dollar amount for interest as Jason if her rate was lower. Find each of their interest payments, and then explain why she paid the same.

Problem Solution Name:	**Solution Verification** Name:

Unit 1 Lesson 3 – Daily Routines - Solve It! Problems (pairs) **5-6**
1 per student

Partner 2 - Problem 5:
A Terry le cobraron 20% de interés sobre su compra con tarjeta de crédito por $350. A Jason le cobraron 25% en su compra por $280. Teery no entendía por qué pagó la misma cantidad en dólares por concepto de interés que Jason, si su tasa era más baja. Encuentra el pago de interés de cada uno, y luego explica por qué ella pagó lo mismo.

Problem Solution Name:	**Solution Verification** Name:

Unit 2 Lesson 3 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

$$\frac{8}{9} - \frac{1}{3} = ???$$

X Marks the Spot

Solve for x.

$$9.05 - 6\frac{3}{10} = x$$

Materials
- Small sticky notes
- **BLM** Vocabulary Chart 1 for each student
- **BLM** Plot Elements

Literature Selection
Call it Courage
by Armstrong Sperry

Math Vocabulary
fraction
ratio
percent
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
millrace
trough
cauterize
perilous
reverberated
impetus

Teacher Note
Sticky note example for unfamiliar word: (convulsively)

His fingers gripped the paddle convulsively.

ELPS (*English Language Proficiency Standard*)
1E, 1F, 2D, 3C, 3E, 4D, 4G, 4I, 4J

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.C.2., I.C.3., II.A.2.
ELA II.A.1., II.A.3., II.A.4., II.B.1., II.D.2., III.B.2.

Unit 3, Lesson 3 — Grades 5-6

Classroom Lesson

Every day teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

Math Objectives:
- Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models.
- Represent ratios and percents with concrete models, fractions, and decimals.

Language Objectives:
- Determine or clarify the meaning of unfamiliar or multiple meaning words using context clues.
- Describe events that advance the story, explaining how each event foreshadows future events.
- Make inferences and draw conclusions about the structure and elements of fiction and provide evidence from text to support understanding.

BEFORE READING
Building Background – Vocabulary & Literature
Distribute **BLM vocabulary chart** to students or have them take it from their binder/folder.
Ask, "Which of our vocabulary words did we read in chapter three and four?" (*cauterize, perilous)* Allow students to respond.
Say, "We will continue to add to our background knowledge for these two vocabulary words. This way when we read them or hear them again in conversation, we will have a vivid image in our mind what the word means and can relate it to the events in this book."

Guide students in rereading the vocabulary words in the first column of the chart.
Say, "Locate cauterize on the chart. Point to the word. Think of a simple picture to represent the first word. Draw it underneath the word."

Utilize the teacher copy of **BLM Vocabulary Illustrations** if needed for suggestions. Discuss the use of the word in the book from yesterday's reading.

Ask, "How many times does your mouth open when you say *cauterize*?" *(3)*
Allow for responses.

Say, "That means there are three syllables in the word *cauterize*. Let's write the word as we would pronounce it.

Model on the board writing *cau-ter-ize*.

Ask, "What part of speech is *cauterize*?" Turn to your neighbor and tell them what you think and why.

Say, "Cauterize is a verb because it is the action being done to the wound to heal it. Let's write verb under the pronunciation."

Say, "Think of what a cauterize means and where we would witness it being done. Turn to your neighbor and brainstorm a simple definition for the meaning of cauterize. Give thumbs up when you are ready."

Collaboratively write a simple definition for cauterize in the next column.
Say, "The final column is for a sentence or a connection you can make to the story. Rewrite the sentence from the story containing cauterize or write your own creative sentence using cauterize. Then, read your sentence to your neighbor."

Continue following the same framework for *perilous (three syllables: per-il-ous)*. Fill in all boxes for perilous. The chart will be completed AFTER READING for the other vocabulary words with a partner.

Guide students' attention to the vocabulary word cards. Reread the cards as a class for one minute as you randomly point to the word cards. Speed the pace up for reading the cards during the minute.

Say, "Just a reminder that there may still be words that we get stuck on or are not sure of their meaning. I want you to use the sticky notes to mark the words you are not sure of, so that later we can clarify the words."

Prior to class…have the students' index cards from lesson 1 and 2 pulled from the wall. Leave the illustrations on the wall or reorganize in another location in order. Randomly hand out the events to individuals. Direct students to review the illustrations and discuss which event their index card matches with a neighbor. Encourage students to walk through the 'gallery' to observe all illustrations prior to selecting one. Students then match the event to the illustration posted and explain the

whys behind the match.

Unit 3, Lesson 3 **Grades 5-6**

Classroom Lesson - continued

Ask, **"**What do you think Mafatu will do when the eaters-of-men return? Why do you think this?" Take a vote on the predictions. Say, "Let's read and find out which prediction(s) are correct?"

DURING READING

Comprehensible Input - Vocabulary & Literature

Read pp. 36-116 (remainder of chapter 4 and chapter 5):

Begin reading the story as a whole class, alternate readers, and read you-read portions to the students as well. The manner in which the book is read will depend on the level of readers in your class, their decoding ability, language proficiencies, and the time allotted for oral reading.

As you read portions of the text, model comprehension monitoring strategies to help readers become aware of whether they are understanding the text they read.

As you model good reading, intentionally reveal a roadblock to understanding the text:

- Identify the difficulty *(misread word, unknown word, section that doesn't make sense)*.
- Use think-aloud procedures that highlight where and when the difficulty began.
- Restate what was read.
- Looking back through the text *(rereading)*.
- Looking forward, reading ahead to find information that might help.

During the reading of this book, you will stop periodically throughout the reading for each day to contemplate predictions about what might follow logically in the next portion or chapter of the book. It is important for the class to revisit predictions made after sections of the book are read. Students will understand then how predictions impact comprehension. Students can vote on which predictions are most likely and explain why as the reading continues and the plot unfolds.

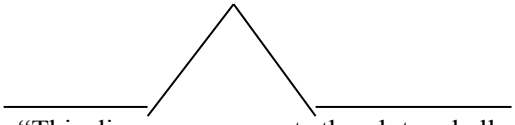
Record major events that occur within the two categories: **Could Happen/Could Not Happen.** The events are 'major' if it is an event that directly affects the main character and the plot of the story. Ensure that students continue to consecutively number their events.

Stop at the end of chapters to discuss sticky marked words. Discuss with the group context clues to help with clarification of sticky words. Guide students in using the same steps you modeled while clarifying when you hit a roadblock while reading.

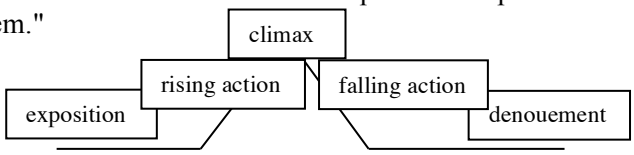
Say, “I wonder if one of the other Polynesian boys could have taken care of himself on the island as well as Mafatu. What do you wonder?”

Say, “This book had a spectacular plot! The plot was the series of events that made the story possible. You wrote the events in two categories, events that could happen and events that could not happen.”

DRAW on the board the following diagram:



Say, “This diagram represents the plot and all of the events you have listed. There are five elements or parts to the plot. Watch as I label them."



Say, “I will tell you a little about each of these elements. The exposition includes all of the setting and background information the author gave at the beginning of the story.

Ask, “What was the setting?” Allow students to respond
Ask, “What background information did the author give us before major events began happening?” Allow students to respond

Say, “Following the exposition is the rising action. This is when multiple events happen in the story. Let’s read some from our list that would be included in the rising action.”

Read events from the list as a class that would be included in the rising action.

Say, “The climax is next. What do you notice about the location of the climax on the diagram?” Allow for response.

Say, “Absolutely, the climax is at the top and very important to the plot. The climax is the moment in the story of the GREATEST danger or when a major decision is made.”

Ask, “What do you think was the climax in the story? Why do you think so?” Allow for discussion.

Say, "The falling action is next. These are the events that are effects of the climax. So, the climax caused these effects. Let's look at our list of events and read some of the falling action events."

Say, "Finally, we have the denouement. This is originally a French term meaning to untie. This helps with the meaning of denouement; it is the final outcome and untying of the plot. It is the conclusion of the story."

Ask, "What is the denouement of this story?" Allow for response.

AFTER READING
Practice and Application – Vocabulary & Literature
Say, "These elements of plot are helpful for writing stories that are interesting to the reader and keep them engaged in the story line."

Allow students to complete the vocabulary chart. Finishing the information for the remaining two words *(reverberate, impetus)* in partners.

Then, as time remains- allow students to work in groups of four to five to complete the plot illustrations for BLM plot elements. Peer assistance is encouraged. Illustrations can be as detailed as time allows or simple phrases.

ELPS (*English Language Proficiency Standard*)
1E, 2E, 2G, 3B, 3D, 3F, 4C, 4E, 4H

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.C.1., I.C.2., II.D.1.
MATH I.B.1., II.B.1., II.C.1., IV.B.1., VI.B.4.

Unit 3, Lesson 3 — Grades 5-6

Classroom Lesson - continued

Transition to Math

Review percent concepts. Students can use the strip diagram, equivalent ratio setup *(proportions)*, and/or mental math strategies to solve percentage problems *(tax)* in this lesson. Please write these problems on the board or projector and work through them with the class.

Problem #1

10% tax was charged on a purchase made by a customer. What did their purchase cost *(before tax)* if the tax was only $5.00?

10% = $5.00. Ten groups of 10% (which is 100%) = $50.00. Purchase was $50.00 before tax.

Problem #2

There was a 33% state tax on exotic spice imports. How much would Sugar n Spice pay in state taxes on a shipment that cost $510? *(approximate 33% as one-third)*

33% is approximately one-third. One-third of $510 = $170. Tax would be $170.

Students can use mental math strategies like partials to perform the division.

"How many groups of three will make 510?" Students should start with a big partial of 100. "100 groups of three equal 300. There are only 210 left. How many groups of three do we need to make 210?" Break this apart however student's need, but "21" is compatible with three and they could arrive at 70 groups quickly. Combined partials equal 170.

Problem #3

Jessica holds 20% of her paycheck back to cover taxes at the end of the year. She held $90 back on her last check. How much was her whole check?

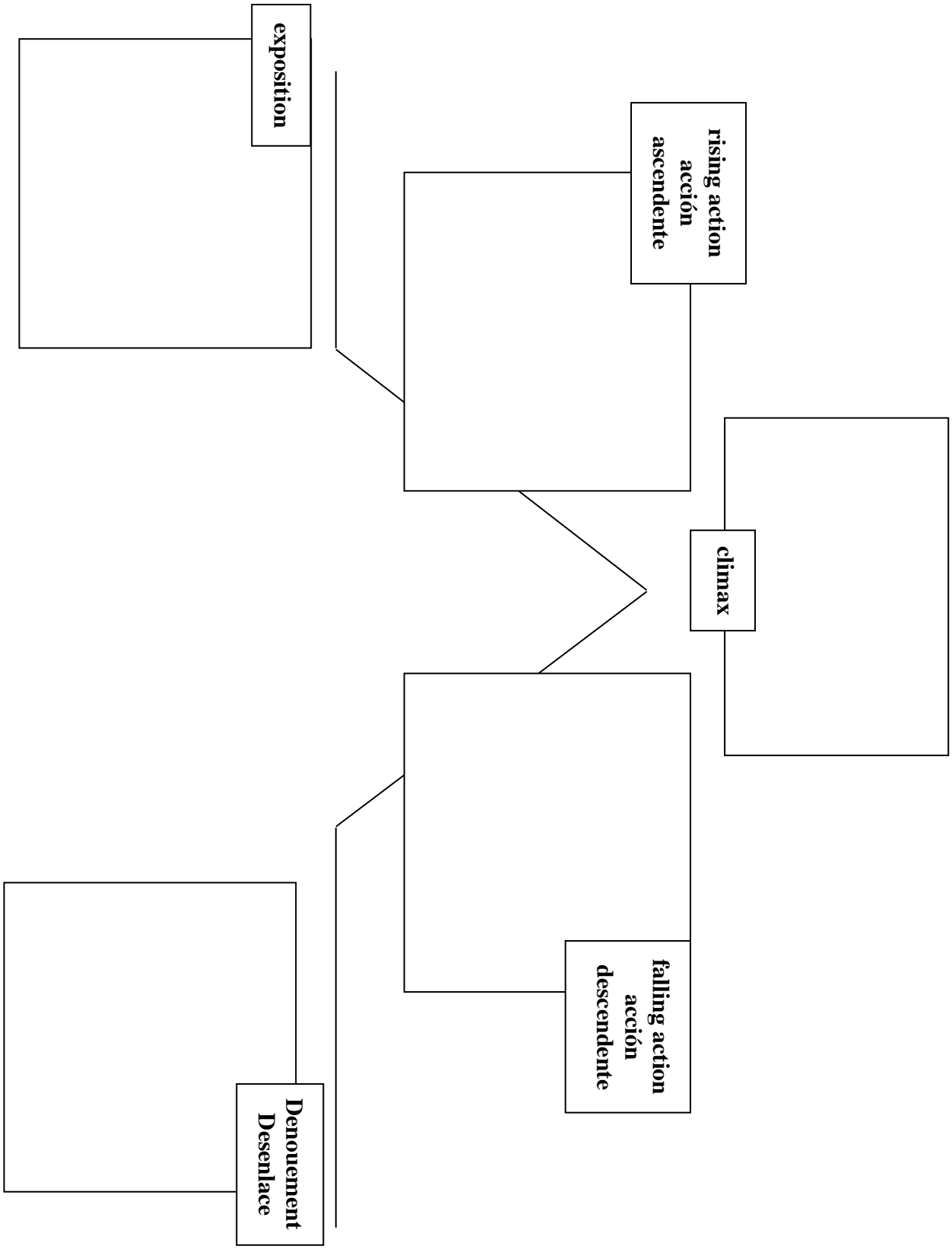
20% (which is one-fifth) = $90. Times 5 = $450.
Or 10% (half of 20%) = $45. Multiply by 10 (for 100%) = $450.
Her whole check was $450.

Objectives

Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 3 Lesson 3 – Classroom Lesson **BLM Plot Elements**

One per student



Materials
- **BLM** Tahitian Sharks

Math Vocabulary
fraction
ratio
percent
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
millrace
trough
cauterize
perilous
reverberated
impetus

Teacher Note
The Transition to Math was utilized as a review piece for today. The TV Lesson will start a new concept unrelated to the Transition.

ELPS (*English Language Proficiency Standard*)
1F, 1G, 2F, 2G, 3D, 3H, 4E, 5B, 5C

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.1., I.C.2., I.E.1., II.B.2.
ELA I.A.2., II.A.2., II.A.3., III.B.2., IV.A.3.
MATH I.B.1., I.C.1., II.B.1., IV.B.1., VIII.A.1., VIII.A.3., VIII.A.4.IX.A.2.

Unit 3, Lesson 3 — Grades 5-6
TV Lesson

Math Objectives:
- Use ratios to describe proportional situations.
- Represent ratios and percents with concrete models, fractions, and decimals.
- Use ratios to make predictions in proportional situations.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Building Background
See Teacher Note in sidebar.
Students should be getting comfortable with the solution strategies for finding equivalent ratios or unknowns in ratio situations. This TV Lesson will continue to strengthen those skills and strategies. Like Lesson 2, the numbers used in these ratios are not as noticeably compatible. The TV Teacher will show students how to simplify a ratio in order to easily find an invariant or covariant relationship instead of reverting to the cross-multiply strategy.

The problem situations in this lesson refer to different species of sharks commonly found near Tahiti as well as some that were mentioned in the book.

Comprehensible Input
In Lesson 1 students were exposed to the many ways they can set up ratio proportions and still arrive at the same answer. Lesson 2 exposed students to the strategy of thinking in "groups of" to find invariant and covariant relationships. Lesson 3 will demonstrate how to simplify a ratio first in order to find an invariant or covariant relationship or to work with "smaller" more easily calculated numbers. While students learned ratios can be set up in various ways, it is recommended they model after the TV Teacher. This is to ensure they understand the process of simplifying.

Problem #1
Reef sharks are known to give birth to as many as 2-5 pups at a time. In the warm ocean nursery Mafatu counted three female sharks and 12 pups. Assuming each mother shark gave birth to an equal number of pups, calculate how many pups were born to only two of the mothers.
Known ratio: 3 reef sharks: 12 pups
Unknown ratio: 2 reef sharks: ??? pups

$$\frac{\textbf{3 reef sharks}}{\textbf{12 pups}} = \frac{\textbf{2 reef sharks}}{\textbf{??? pups}}$$

There are several different ways to solve this proportion problem, and students may notice the other relationships immediately. The strategy of simplifying is just another tool to add to their belt. Simplifying can highlight numerical relationships that may have otherwise been unrecognizable, and provides smaller/friendlier numbers to calculate.

Simplify the 3:12 comparison. Students may use a multiplication chart to find the simplified form of 3:12, or divide by three as shown.

$$\left(\frac{\div 3}{\div 3}\right) \quad \frac{\textbf{3 reef sharks}}{\textbf{12 pups}} = \frac{\textbf{2 reef sharks}}{\textbf{??? pups}}$$

The new proportion is:

$$\frac{\textbf{1 reef shark}}{\textbf{4 pups}} = \frac{\textbf{2 reef sharks}}{\textbf{??? pups}}$$

From this point, both the invariant and covariant relationships are obvious and easily calculated. Let students decide which method they want to utilize. Reconvene as a class and discuss answer. *(8 pups)*

Teacher Note
Common Misconception: Renaming the ratio in its lowest terms does not change its value. Therefore, there is no need to balance the right side of the equation. Students may think they have to divide the other ratio by three, which leads to confusion.

Problem #2

Hammerheads are known to give birth to as many as 12-15 pups at a time. In the warm ocean nursery Mafatu counted five female sharks and 65 very small pups. Assuming each mother shark gave birth to an equal number of pups, calculate how many pups were born to only three of the mothers.
Known ratio: 5 hammerheads: 65 pups
Unknown ratio: 3 hammerheads: ??? pups

The numerical relationships aren't as obvious with the numbers chosen for this problem even though the context is nearly identical to Problem #1. Follow the same process of simplifying the original ratio. Students may use a multiplication chart if needed, or divide by five as shown.

$$\frac{\div 5}{\div 5} \quad \frac{\textbf{5 hammerheads}}{\textbf{65 pups}} = \frac{\textbf{3 hammerheads}}{\textbf{??? pups}}$$

The new proportion is:

$$\frac{\textbf{1 hammerhead}}{\textbf{13 pups}} = \frac{\textbf{3 hammerheads}}{\textbf{??? pups}}$$

From this point, both the invariant and covariant relationships are obvious and easily calculated. Let students decide which method they want to utilize. Reconvene as a class and discuss answer. *(39 pups)*

Problem #3

Lemon Sharks are known to give birth to as many as 15-18 pups at a time. In the warm ocean nursery Mafatu counted six female sharks and 96 very small pups. The pups had separated themselves into two groups. Assuming each mother shark gave birth to an equal number of pups, calculate how many female Lemon Sharks gave birth to the 64 pups in the group closest to Mafatu.
Known ratio: 6 lemon sharks: 96 pups
Unknown ratio: ??? lemon sharks: 64 pups

The numerical relationships aren't as obvious with the numbers chosen for this problem and the context is different than the first two problems. Follow the same process of simplifying the original ratio. Students may use a multiplication chart if needed, or divide by five as shown.

$$\frac{\div 6}{\div 6}\ \frac{\textbf{6 lemon sharks}}{\textbf{96 pups}} = \frac{\textbf{??? lemon sharks}}{\textbf{64 pups}}$$

The new proportion is:

$$\frac{\textbf{1 lemon shark}}{\textbf{16 pups}} = \frac{\textbf{??? lemon sharks}}{\textbf{64 pups}}$$

From this point, both the invariant and covariant relationships are obvious and easily calculated. Let students decide which method they want to utilize. Reconvene as a class and discuss answer. *(4 lemon sharks)*.

Time permitting; continue with the following proportions to practice simplifying. Write them on the board.

Problem #4

$$\frac{6}{15} = \frac{20}{x}$$

6:15 simplifies by (÷3) to 2:5. Scale Factor of (x10) is applied to get $x = 50$.

Problem #5

$$\frac{35}{x} = \frac{14}{4}$$

14:4 simplifies by (÷2) to 7:2. Scale Factor of (÷5) is applied to get $x = 10$.

Teacher Note
Numerical relationships in proportional situations are always multiplicative. It is also preferred that students write a scale factor or constant of proportionality as a multiplication of a fraction instead of a division of a whole number. However, either is acceptable for

this grade band. Ex: (÷4) should be expressed as (x $\frac{1}{4}$).	**Unit 3, Lesson 3** **Grades 5-6** **TV Lesson** - continued --- Problem #6 $$\frac{33}{9} = \frac{x}{15}$$ 33:9 simplifies by (÷3) to 11:3. Scale Factor of (x5) is applied to get $x = 55$. Allow students to discuss within their groups and whole class which strategy they prefer when solving for an unknown in a proportional situation. Make sure they justify their reasoning. **Captain's Corner** In a small group, pick one proportion from Problems #4 - #6 and write a word problem that would fit the equation. Post your word problems on MAS Space for Captain Portio and the TV Teacher to read! **Objectives:** Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 3 Lesson 3 – TV Lesson
One per student

Tahitian Sharks

Work with your teacher and peers to answer the questions.

1. Reef sharks are known to give birth to as many as 2-5 pups at a time. In the warm ocean nursery Mafatu counted 3 female sharks and 12 pups. Assuming each mother shark gave birth to an equal number of pups; calculate how many pups were born to only 2 of the mothers.

2. Hammerheads are known to give birth to as many as 12-15 pups at a time. In the warm ocean nursery Mafatu counted 5 female sharks and 65 very small pups. Assuming each mother shark gave birth to an equal number of pups; calculate how many pups were born to only 3 of the mothers.

3. Lemon Sharks are known to give birth to as many as 15-18 pups at a time. In the warm ocean nursery Mafatu counted 6 female sharks and 96 very small pups. The pups had separated themselves into two groups. Assuming each mother shark gave birth to an equal number of pups; calculate how many female Lemon Sharks gave birth to the 64 pups in the group closest to Mafatu.

Unidad 3 Lección 3 –

Tiburones tahitianos

Colabora con tu maestro y tus compañeros para responder las preguntas.

4. Los tiburones de arrecife pueden dar a luz entre 2 y 5 crías por camada. En el criadero oceánico Mafatu contó 3 tiburones hembras y 12 crías. Asumiendo que cada madre dio a luz un número igual de crías, calcula cuántas crías nacieron de dos de las madres.

5. Los peces martillo pueden dar a luz entre 12 y 15 crías por camada. En el criadero oceánico Mafatu contó 5 tiburones hembras y 65 crías muy pequeñas. Asumiendo que cada madre dio a luz un número igual de crías, calcula cuántas crías nacieron de 3 de las madres.

6. Los tiburones limón pueden dar a luz entre 15 y 18 crías por camada. En el criadero oceánico Mafatu contó 6 tiburones hembras y 96 crías muy pequeñas. Las crías se habían separado en dos grupos. Asumiendo que cada madre dio a luz un número igual de crías, calcula cuántos tiburones limón hembras dieron a luz a las 64 crías en el grupo más cercano a Mafatu.

Materials
- Family Fun Generic Game Board
- Family Fun Movement Cards
- Unit 3 Family Fun Problem Cards for grades 5-6 (yellow)
- Family Fun Answer Key for Unit 3 (all grade bands)
- Unit 3 Family Fun Special 5th – 6th Game Instructions
- game markers
- **BLM** Recursive Review Problems Lessons 1-3

Math Vocabulary
fraction
ratio
percent
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
millrace
trough
cauterize
perilous
reverberated
impetus

ELPS (*English Language Proficiency Standard*)
1G, 2E, 2G, 2H, 3D, 3F, 4F, 5A, 5B

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ELA I.A.1., I.A.2., II.A.2., III.B.1., III.B.2., IV.A.3.
MATH I.B.1., I.C.1., II.B.1., IV.B.1., VIII.A.1., VIII.A.3.

Unit 3, Lesson 3 — Grades 5-6

Follow-up

Math Objectives:
- Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.
- Use addition and subtraction to solve problems involving whole numbers and decimals.
- Add and subtract positive rational numbers fluently.
- Use ratios to describe proportional situations.
- Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models.
- Represent ratios and percents with concrete models, fractions, and decimals.
- Use ratios to make predictions in proportional situations.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Practice and Application
Allow students to use this time to complete the extra practice Problems #4-6 from the TV Lesson. Though, it is imperative they learn and play the Unit 3 Family Fun Game. Like Unit 2, the game reviews all objectives covered on the assessments for 5th and 6th grade.

Recursive Review
Please use **BLM** *to answer the Recursive Review questions.*

- How many green pebbles does Taylor need to mix with the 18 red pebbles if the art project directions said she was supposed to use 7 green to every 2 red?

Writing Topics
Independent Writing Topic
Students will have a daily writing activity which will incorporate the day's focus math vocabulary.

- **What is the major difference between a fraction and a ratio? Provide an example to justify your answer.**

Objectives
Review the math and language objectives to make sure that they were accomplished and that the students realize how they were accomplished.

Materials
- 1 slice of raisin bread (cut into a circle)
- 1 banana
- 3 paper dessert plates
- 3 paper towels

All items above per group of three
- **BLM** Raisin Bread and Banana-Snack Fractions

1 per student
- **BLM** Raisin Bread and Banana-Snack Fractions Teacher Guide

Math Vocabulary
fraction
ratio
percent
scale factor (covariant)
constant of proportionality (invariant)

Literature Vocabulary
millrace
trough
cauterize
perilous
reverberated
impetus

Unit 3, Lesson 3 Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents.
- Convert between fractions, decimals, and percents.
- Estimate to find solutions to problems involving fractions, decimals, and percents.

Language Objectives
- Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.

Snack Fractions
**Use a cookie or biscuit cutter to cut the raisin bread into circles.*

Tell students they will use the same process today that they used in the Snack Fraction for Lesson 1 and Lesson 2. Students should have the skills to answer these in small groups. Have the students work through the BLM before sharing the actual snack.

Circulate the room while students are working on the BLM, asking questions as needed to guide, redirect, extend:

QUESTIONS
- What does this fraction mean?
- How did you know where to "cut" the bread and banana?
- How did you change your decimal to a percent?

Once the activity is complete, let them enjoy their raisin bread and banana. Please allow students a larger portion to eat if thirds seem too small.

Snack Fraction Journal Writing: BLM Raisin Bread and Banana-Snack Fractions

True or False: One-third of the banana is equivalent to one-third of the raisin bread. Justify your answer.

Objectives: Review the objectives with the class, making sure they understand how they achieved each.

Unit 3 Lesson 3 – Snack Fractions
One per student

Raisin Bread and Banana – Snack Fractions

Divide the snack equally between the THREE of you. Work with your group to solve the problems.

1. What fraction represents your portion of the bread out of the whole?
   word _____ fraction _____ = _____
   decimal _____ percent _____

2. What fraction represents your portion and one partner out of the whole?
   word _____ fraction _____ = _____
   decimal _____ percent _____

3. What fraction represents your portion and two partners out of the whole?
   word _____ fraction _____ = _____
   decimal _____ percent _____

4. Using the picture, represent your portion *and* one partner's portion.

Now pretend there are six of you sharing the whole snack.

5. What fraction represents your portion and one partner out of the whole?
   word _____ fraction _____

6. What fraction represents your portion and two other partners out of the whole?
   word _____ fraction _____ = _____
   decimal _____ percent _____

7. Draw a picture proving that $\frac{1}{3} + \frac{1}{3} + \frac{2}{6} + \frac{2}{6} = 1\frac{1}{3}$

Unit 3 Lesson 3 – Snack Fractions
One per student

Raisin Bread and Banana – Snack Fractions

Divide el refrigerio de manera equitativa entre ustedes TRES. Colabora con tu grupo para resolver los problemas.

1. ¿Qué fracción representa tu porción del pan respecto al entero?
   palabras _____ fracción _____= _____
   decimal _____ porcentaje _____

2. ¿Qué fracción representa tu porción del pepinillo y un compañero respecto al entero?
   palabras _____ fracción _____= _____
   decimal _____ porcentaje _____

3. Qué fracción representa tu porción y dos compañero respecto al entero?
   palabras _____ fracción _____= _____
   decimal _____ porcentaje _____

   Usando el dibujo, representa tu porción **y** la de un compañero.

Ahora imagina que hay seis compartiendo el refrigerio entero.

4. ¿Qué fracción representa tu porción y un compañero respecto al entero?
   palabras _____ fracción _____

5. Qué fracción representa tu porción y dos compañero respecto al entero?
   palabras _____ fracción _____= _____
   decimal _____ porcentaje _____

6. Haz un dibujo que prueba que $\frac{1}{3} + \frac{1}{3} + \frac{2}{6} + \frac{2}{6} = 1\frac{1}{3}$

Unit 3 Lesson 3 – Snack Fractions **KEY**
One per student

Raisin Bread and Banana – Snack Fractions

Divide the snack equally between the THREE of you. Work with your group to solve the problems.

1. What fraction represents your portion of the bread out of the whole?
   word one-third fraction $\frac{1}{3}$
   decimal 0.33 percent 33%

2. What fraction represents your portion and one partner out of the whole?
   word two-thirds fraction $\frac{2}{3}$
   decimal 0.66 percent 66%

3. What fraction represents your portion and two partners out of the whole?
   word three-thirds fraction $\frac{3}{3}$
   decimal 1.0 percent 100%

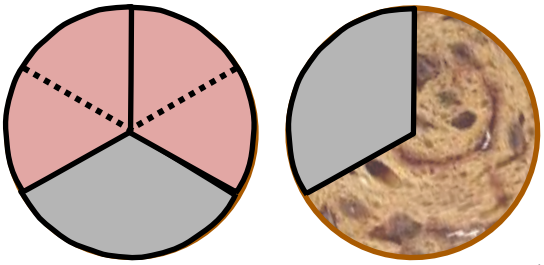
4. Using the picture, represent your portion *and* one partner's portion.

Now pretend there are six of you sharing the whole snack.

5. What fraction represents your portion and one partner out of the whole?
   word two-sixths fraction $\frac{2}{6}$

6. What fraction represents your portion and two other partners out of the whole?
   word three-sixths fraction $\frac{3}{6}$ or $\frac{1}{2}$
7. decimal 0.50 percent 50%

8. Draw a picture proving that $\frac{1}{3} + \frac{1}{3} + \frac{2}{6} + \frac{2}{6} = 1\frac{1}{3}$
   Pictures will vary. Make sure shaded regions model the equation.



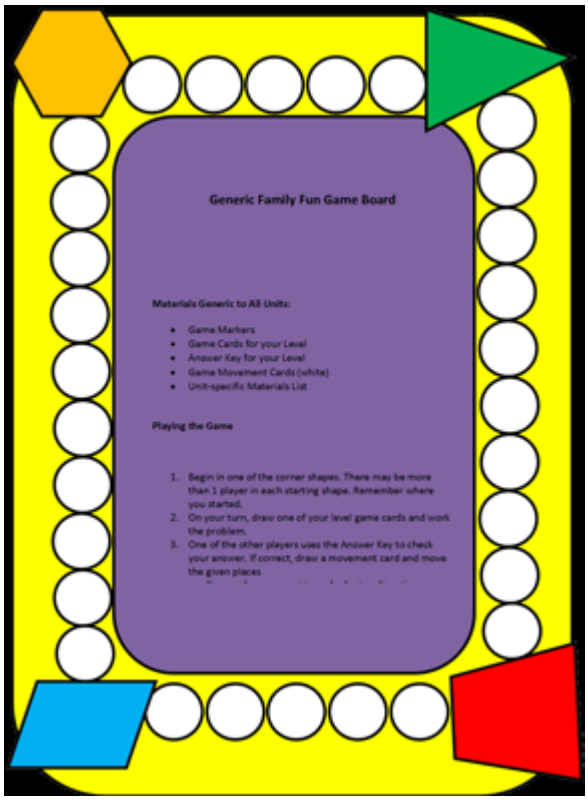
Unit 3 Lesson 3 – Family Fun

Dear _____,

I brought home another Family Fun game!

It covers all of the math concepts on my test! Here are some of the strategies I feel most confident using…

_____
_____
_____
_____
_____
_____



Sincerely,

_____

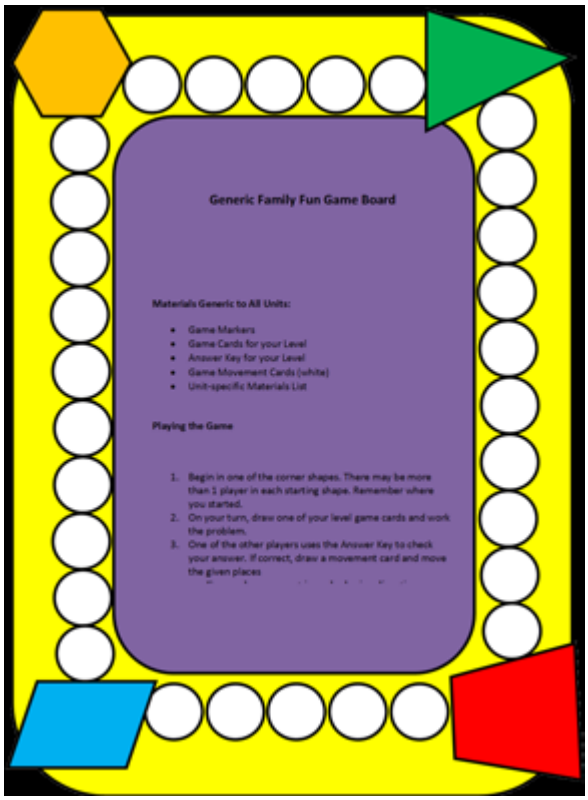
Unit 3 Lesson 3 – Family Fun

Querido _____,

¡Hoy traje otro juego a casa!

Es un repaso de todos los conceptos matematicos en el examen. Estas son algunas estrategias donde tengo mayor confianza…

_____
_____
_____
_____
_____
_____



Atentamente,

_____

This portion of the curriculum is NOT required, but should be used to supplement and enrich the Unit's activities.

Torn Construction Paper Art Project

Enrichment Suggestions 5-6

Unit 3 ***Call It Courage***

Math Walk
Take a walk around the school and find objects that are about the same height as some of the tallest Moai (up to 72 ft.) and about the same weight as some of the heaviest Moai (140 - 270 tons).

Technology Connection
http://youtu.be/YpNuh-J5IgE
YouTube video showing how the Moai "walked."

More Curriculum Connection Ideas off the Web

- **Social Studies:** http://travel.nationalgeographic.com/travel/world-heritage/easter-island/
  History of the Moai of Easter Island
- **Science**:
  http://news.nationalgeographic.com/news/2012/06/120622-easter-island-statues-moved-hunt-lipo-science-rocked/
  How science predicts the Moai were moved.
  http://adventure.howstuffworks.com/easter-island3.htm
  How Stuff Works – How Easter Island Works
- **Art:**
  http://www.firstpalette.com/Craft_themes/People/moaistatues/moaistatues.html
  Create a Moai statue out of sand.
  http://www.youtube.com/watch?v=bdYRg2tEuyg
  Build a Moai statue out of paper.
  Mold a Moai statue out of clay.
  Create your favorite scene from the story using torn construction paper and a glue stick. *(similar to the picture shown)*

Units 3 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

*Print on **yellow** paper.*

Family Fun – Problem Cards (1 of 2)

A. The water in the pool evaporated by 6.20 ft. The owner filled it back up by $3\frac{3}{4}$ feet. Where is the water level now?	**B**. A recipe calls for 1.25 cups of chocolate chips and $2\frac{1}{2}$ cups of sugar. How many cups of sweet ingredients would that be altogether?	**C**. Tulle marked off 30.6 ft. by 15.4 ft. in the back yard for her new pool. What will be the perimeter for the new pool?
D. Delia had to travel 7809.46 miles to get to her new job interview. She already traveled 3045.7 by car on the first day. How many miles does she have left?	**E**. Phillip had $978.14 in his bank account. After buying a gift for his mother, he had $797.63. How much was her gift?	**F**. Felicia drank 64.9 oz. of water by lunch, 32.5 oz. while working out, and 32.3 at dinner. What was her total water intake for the day?
G. There was a 17.5% tax on the imported organic fruit. If Pedro's basket of organic apples was $32, what would he pay after tax?	**H**. Gail charged a 25% service tax on craft services. How much would the total bill be if a craft cost $11.40?	**I**. Jim deposited $75,000 into a savings account for his daughter. It would earn 15% interest in one year if untouched. How much did he earn that year?

Units 3 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

*Print on **yellow** paper.*

Diversión familiar – Cartas de problemas (1 de 2)

A. El agua en la piscina se evaporó en 6.20 ft. El dueño volvió a llenarla $3\frac{3}{4}$ pies. ¿Dónde está el nivel de agua ahora?	**B**. Una receta pide 1.25 tazas de chispas de chocolate y $2\frac{1}{2}$ tazas de azúcar. ¿Cuántas tazas de ingredientes dulces serían en total?	**C**. Tulle señaló un área de 30.6 pies por 15.4 pies en el patio trasero para su nueva piscina. ¿Cuál será el perímetro de la nueva piscina?
D. Delia tuvo que viajar 7809.46 millas para llegar a su nueva entrevista de trabajo.. Ella ya viajó 3045.7 millas en carro en el primer día. ¿Cuántas millas le faltan para llegar?	**E**. Phillip tenía $978.14 en su cuenta bancaria. Después de comprar un regalo para su madre, tenía $797.63. ¿Cuánto costó el regalo?	**F**. Felicia bebió 64.9 onzas de agua en el almuerzo, 32.5 onzas mientras hacía ejercicio, y 32.3 onzas en la cena. ¿Cuánta agua bebió en total durante el día?
G. Había un impuesto del 17.5% en la importación de fruta orgánica. Si la canasta de manzanas orgánicas de Pedro costaba $32, ¿cuánto pagaría después del impuesto?	**H**. Gail cobró un impuesto por servicio del 25% sobre sus manualidades. ¿Cuánto sería el total de una cuenta si una manualidad costó $11.40?	**I**. Jim depositó $75,000 en una cuenta de ahorros para su hija. Ganaría 15% de interés en un año si no se toca. ¿Cuánto ganó en ese año?

Units 3 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

*Print on **yellow** paper.*

Family Fun – Problem Cards (2 of 2)

J.
Elijah's credit card charged him 20% interest each month on purchases. If he charged $380, what is his total balance?

K.
Justin left a 30% tip on his food bill of $180.20. What did he pay for dinner altogether?

L.
What would be a 15% tip on a check that was $99.00?

M. Determine if this statement is true.

$$\frac{16 \text{ red}}{3 \text{ black}} = \frac{6 \text{ black}}{32 \text{ red}}$$

N. Determine if this statement is true.

$$\frac{122 \text{ failed}}{200 \text{ passed}} = \frac{61 \text{ failed}}{100 \text{ passed}}$$

O. Based on the ratio given, determine how many students fit on one bus.

216 students : 4 buses

P.
Jesse threw a strike 24 out of every 30 times he pitched the baseball. Based on this ratio, how many times would he throw a strike if he pitched 45 times?

Q.

$$\frac{1}{6} + \frac{2}{12} = ???$$

R.

$$2\frac{4}{9} - ??? = 1\frac{2}{9}$$

Units 3 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

*Print on **yellow** paper.*

Diversión familiar – Cartas de problemas (1 de 2)

J.
La tarjeta de crédito de Elijah le cobró un 20% de interés cada mes sobre sus compras. Si él compró $380, ¿cuál es su saldo total?

K.
Justin dejó una propina de 30% en su cuenta de restaurante de $180.20. ¿Cuánto pagó en total por la cena?

L.
¿Cuánto sería una propina del 15% en una cuenta de $99.00?

M. Determina si esta afirmación es correcta.

$$\frac{16 \text{ red}}{3 \text{ black}} = \frac{6 \text{ black}}{32 \text{ red}}$$

N. Determina si esta afirmación es correcta.

$$\frac{122 \text{ failed}}{200 \text{ passed}} = \frac{61 \text{ failed}}{100 \text{ passed}}$$

O. En base a la relación dada, determina cuántos estudiantes caben en un autobús.

216 estudiantes : 4 autobuses

P.
Jesse lanzó un strike 24 de cada 30 veces que lanzó la pelota. En base a esta tasa, ¿cuántas veces lanzaría un strike si hiciera 45 lanzamientos?

Q.

$$\frac{1}{6} + \frac{2}{12} = ???$$

R.

$$2\frac{4}{9} - ??? = 1\frac{2}{9}$$

Units 3 Lesson 3 – FAMILY FUN

One per student for home
One per partner pair in class

Special 5th – 6th Game Instructions

Materials:

- Family Fun Generic Game Board
- Family Fun Movement Cards
- Unit 3 Family Fun Problem Cards for grades 5-6 (yellow)
- Family Fun Answer Key for Unit 3 (all grade bands)
- Unit 3 Family Fun Special 5th – 6th Game Instructions

Solution Expectations

Problems A – B
This problem set is asking students to convert between decimals and/or fractions to solve. They can choose whichever one they are more comfortable with.

Problems C – F
This problem set covers the addition and subtraction of decimals. Students shouldn't have a tough time solving these. The main concern is to make sure place value spots are lined up correctly. Some students line up the decimals, which lines up place value.

Problems G – L
This problem set deals with percents (tax, interest, and tip). All are solved in the same fashion. Students are encouraged to find 10% and work from there.

Problems M – P
This problem set covers equivalent ratios. Students are asked to determine if ratios are equivalent/proportional, and to make predictions based off of ratios.

Problems Q – R
This problem set covers adding and subtracting with unlike denominators. Students must first find a common denominator. They may use the multiplication chart provided to them in Lesson 1.

Unidad 3 Lección 3 – DIVERSIÓN FAMILIAR

1 por estudiante por hogar
1 por pareja de compañeros en el salón

Instrucciones especiales de juego para 5º – 6º

Materiales:

- Tablero de juego genérico de Diversión Familiar
- Cartas de movimiento de Diversión Familiar
- Cartas de problemas de Diversión Familiar de la Unidad 3 para grados 5-6 (amarillo)
- Guía de respuestas de Diversión Familiar para la Unidad 3 (todos los grados)
- Instrucciones especiales de juego de la Unidad 3 de Diversión Familiar para 5º – 6º

Expectativas de solución

Problemas A – B
Este conjunto de problemas pide a los estudiantes que conviertan entre decimales y/o fracciones para resolverlos. Ellos pueden decidir con cuáles se sienten más cómodos.

Problemas C – F
Este conjunto de problemas cubre la suma y resta de decimales. Los estudiantes no deben tener problemas para resolverlos. La principal preocupación es asegurarse de que los espacios de magnitudes estén alineados correctamente. Algunos estudiantes alinean los puntos decimales, con lo que alinean los espacios de magnitud.

Problemas G – L
Este conjunto de problemas utiliza porcentajes (impuestos, interés y propinas). Todos se resuelven del mismo modo. Se anima a los estudiantes a encontrar el 10% y continuar desde ahí.

Problemas M – P
Este conjunto de problemas utiliza relaciones equivalentes. Se pide a los estudiantes que determinen si las relaciones son equivalente/proporcionales, y que hagan predicciones basados en las relaciones.

Problemas Q – R
Este conjunto de problemas cubre sumas y restas con denominadores diferentes. Los estudiantes primero deben encontrar un común denominador. Pueden usar la tabla de multiplicar que se les proporciona en la
Lección 1.

BLM All-School Unit 3, Lesson 3 **Family Fun Game Answer Key**

Problem Letter	Kinder	1-2	3-4	5-6	7-8
A	10 apples	5 + 6 = 11	0.25, 0.55, 0.75	2.45 feet	20 % discount
B	3 lights	12 – 3 = 9	6	3.75 cups or $3\frac{3}{4}$ cups	$69.30 sales price
C	9 pies	33	35	92 feet	$4.80 saved
D	The bottom group	61	50 feet	4763.76 miles	28 lbs
E	The top group	49	3 eggs	$180.51	$498.75
F	The bottom group	43	3 bags	129.7 oz	Approx 33%
G	15	32 wild things	4 x 3 or 3 x 4	$37.60	$220.00 retail
H	7	4 wild things	There are 2 equal groups of 5 stars	$14.25	17 pounds
I	8	14 stayed	5 5/10 or 5 1/2	$11,250 earned	40% discount
J	nickel	(divide into fourths)	3.12	$456.00	$181.13 or $181.14
K	dime	There are 2 equal pieces	7 x 8 = 56 8 x 7 = 56 56 ÷ 7 = 8 56 ÷ 8 = 7	$234.06	$5.40 tip
L	quarter	9	Any model that shows 4 groups of 5 items	$14.85	$303.75 total
M	penny	6 more	10 and 5 hundredths	False, inverted ratio	$9.68 spent
N	Any set with 9 objects in it	6 fewer	Use paper and pencil to model an equivalent fraction such as 2/4, 3/6, 4/8	True, scale factor by half	$26.45 spent
O	Any set with 12 objects in it	3 were climbing	3 tenths, 0.3, is UNshaded	54 students: 1 bus	approx. 33% tip
P	These are halves	2 fewer	5 rows of 8 marks – see special instructions	36 strikes	$19.80 gratuity (tip)
Q	There are 2 equal pieces	3 + 7	First marked benchmark line – See special instructions	$\frac{1}{3}$ or $\frac{2}{6}$ or $\frac{4}{12}$	$45.80 bill before tip
R	18 objects Number card 18	6 + 7 = 13 7 + 6 = 13 13 – 7 = 6 13 – 6 = 7	Between the 0.75 and the 1, but much close to 1- See special instructions	$1\frac{2}{9}$	$575.00 total

Generic Family Fun Game Board

Materials Generic to All Units:

- Game Markers
- Game Cards for your Level
- Answer Key for your Level
- Game Movement Cards (white)
- Unit-specific Materials List

Playing the Game

1. Begin in one of the corner shapes. There may be more than one player in each starting shape. Remember where you started.
2. On your turn, draw one of your level game cards and work the problem.
3. One of the other players uses the Answer Key to check your answer. If correct, draw a movement card and move the given places
   - Forward movement in a clockwise direction.
   - Back movement in a counter clockwise direction.

   If incorrect, do not move.
4. Game is over when the first person runs the entire track, ending back on the starting shape.

Tablero de juego

Materiales genéricos para todas las unidades:

- Fichas para jugar
- Tarjetas del juego para su nivel
- Clave de respuestas para su nivel
- Tarjetas de movimiento del juego (blancas)
- Lista de materiales específicos de la unidad

Cómo se juega

1. Empiece en una de las esquinas. Puede haber más de
1 jugador en cada figura de inicio.
2. Cuando sea su turno, saque una de las tarjetas de
juego de su nivel y resuelva el problema.
3. Uno de los otros jugadores usa la clave de respuestas
para ver si su respuesta es correcta. Si es correcta, saque una tarjeta de movimiento y mueva su ficha como lo indica la tarjeta.
   - Movimiento hacia adelante en el sentido de las manecillas del reloj.
   - Movimiento hacia atrás en el sentido contrario a las manecillas del reloj.

   Si es incorrecta, no se mueve.
4. El juego se acaba cuando la primera persona recorre
toda la pista y termina en la figura de inicio.

BLM 1 Follow-up Lesson 3 Family Fun Game Movement Cards 

Printed in White – 1 set for the TV Lesson Demo. 1 set per partners for class; 1 set per student for home.

Move forward 1 space	**Move forward 1 space**	**Move forward 1 space**
Move forward 1 space	**Move forward 1 space**	**Move forward 1 space**
Move forward 2 spaces	**Move forward 2 spaces**	**Move forward 2 spaces**
Move back 1 space	**Move back 1 space**	**Move back 1 space**
Move forward 3 spaces	**Move forward 2 spaces**	**Move forward 3 spaces**

Units 1 – 2 – 3 -- FAMILY FUN

One per student for home
One per partner pair in class

*Print on **white** paper.*

Family Fun – Movement Cards

Avanza un espacio	**Avanza un espacio**	**Avanza un espacio**
Avanza un espacio	**Avanza un espacio**	**Avanza un espacio**
Avanza 2 espacios	**Avanza 2 espacios**	**Avanza 2 espacios**
Retrocede 1 espacio	**Retrocede 1 espacio**	**Retrocede 1 espacio**
Avanza 3 espacios	**Avanza 3 espacios**	**Avanza 3 espacios**

Unit 3 – *Call It Courage* by Armstrong Perry

Math Matters 2014 – In-Home Instruction

Math Objectives

TV Lesson 1

- Use ratios to describe proportional situations.
- Use ratios to make predictions in proportional situations.

TV Lesson 2

- Use ratios to describe proportional situations.
- Represent ratios and percents with concrete models, fractions, and decimals.
- Use ratios to make predictions in proportional situations.

Differentiate

TV Lesson 1 – students explore the many different ways to set up equivalent rations and proportions.

TV Lesson 2 – students practice the strategy 'thinking in groups of" to find a not-so-obvious scale factor or constant of proportionality.

Snack Fraction Notice

All snack fractions are common throughout the grade bands. All grade bands have daily snack fraction activities provided. All snack fractions for a unit in a specific grade band will practice the same set of skills. Therefore, you may choose from any of the three activities. Lesson 2, Crackers and Nutella is the simplest snack to transport.

Materials

TV Lesson 1

- **BLM** Mafatu's Fruit

TV Lesson 2

- **BLM** Bamboo Fish Trap

Family Fun

- Family Fun Generic Game Board
- Family Fun Movement cards
- Unit 3 Family Fun-Problem Cards
- Family Fun Answer Key from Unit 3 (all grade bands)
- Unit 3 Family Fun Special 5^{th} – 6^{th} Game Instructions
- game markers

Snack Fractions (Lesson 3)

- 1 slice of raisin bread (cut into ~~a~~ circle)
- 1 banana
- 3 paper dessert plates
- 3 paper towels

All items above per group of three

- **BLM** Raisin Bread and Banana-Snack Fractions
  1 per student
- **BLM** Raisin Bread and Banana-Snack Fractions Teacher Guide

QUESTIONING
As a result of this lesson, your students should be able to respond to the following:

- How can thinking in "groups of" help find multiplicative relationships?
- How can a bar model help you find percents?
- How can you prove two ratios are equivalent?
- How do you know one-third is equivalent to two-sixths?
- How are scale factor and constant of proportionality similar? Different?

Math Vocabulary
fraction, ratio, percent, scale factor (covariant), constant of proportionality (invariant)

CGI Problem

- Lesson 1 – Part-Part-Whole (5^{th} assessment item 4)
- Lesson 2 – Compare Referent Unknown (5^{th} assessment item 5)
- Lesson 3 – Price Partitive Division (6^{th} assessment item 6)

Journal Writing
True or False: One-third of the banana is equivalent to one-third of the raisin bread. Justify your answer.

Family Fun
A generic game board is being used in all grade levels, differentiated by game cards specific to the grade level.

Snack Fractions
Students divide their snack into thirds and sixths and calculate fractions, combined fractions, equivalent decimals, and percents.

Assessment
As a result of experiencing the activities in this unit, students will be introduced to and practice skills for items:
5^{th} – all items
6^{th} – all items

Grades 5-6 Overview

Unit 4, Lesson 1 *The Clever Leprechaun* retold by Batt Burns

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine **Unit 4 Lesson 1** 30 – 45 minutes	Solve problems using a measurement tool and calculating measurements. Model and solve multistep word problems. Solve problems involving fractions, ratios, and proportions. Compose and decompose numbers.	Speak to partners, teacher, and class using vocabulary. Discuss problem solving process and strategies.	**Essential:** • Solve It! Problems • CGI **Optional:** • Money Matters	• mid-assessment	• **BLM** Solve It! Problem 1 • **BLM** Lessons 1-3 CGI *The Clever Leprechaun*
Classroom **Lesson 1** 1 hour – 1.5 hours	Use models to relate decimals to fractions. Generate equivalent forms of rational numbers including whole numbers, fractions, and decimals. Compare and order non-negative rational numbers.	Use the context of the sentence to determine the meaning of unfamiliar words or multiple meaning words Summarize and explain the lesson or message of a work of fiction as its theme Listen attentively to speakers, ask relevant questions, and make pertinent comments Write literary texts to express their ideas and feelings about real or imagined people, events, and ideas	apprentice prosperous haunt secluded wily hapless crevice anguished writhe agony **Transition to Math** Students identify benchmark fractions and decimals on a number line while finding equivalencies through all four representations of a fraction. (fourths and halves)	• blue painter's tape or masking tape	• **BLM** Fraction and Decimal Cards-A (2 pages) • **BLM** Fraction and Decimal Cards-A Teacher Guide • **BLM** literature vocabulary cards • **BLM** Close summary (optional activity)

TV **Lesson 1** 30 minutes	Add and subtract positive rational numbers fluently.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Students explore and practice how to convert between decimals and fractions to solve problems.		• **BLM** Equivalency Chart (Lesson 1 only) • **BLM** The Clever Halves and Fourths
Follow-up **Lesson 1** 30 minutes – 1 hour *(including Snack Fractions)*	Use models to relate decimals to fractions. Generate equivalent forms of rational numbers including whole numbers, fractions, and decimals.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Practice and Application** Students will play the game Fractions and Decimal Memory A to practice finding equivalencies within all representations of fractions.		• **BLM** Fraction-Decimal Memory Game A Directions • Fraction-Decimal Memory Cards A (3 pages) • **BLM** Recursive Review Lessons 1-3
Snack Fractions	Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios and percents. Convert between fractions, decimals and percents. Estimate to find solutions to problems involving fractions, decimals and percents.	Discuss how fractions, decimals, ratios and percents can be used to solve real-world problems.	Students will work in pairs and explore fraction and decimal concepts through fair-sharing a fruit kabob.	• 2 skewers • 16 – 1" cubes cooked meat • 8 cubes pineapple • 8 cheese cubes • 8 cherry tomatoes • 2 paper dessert plates • 2 paper towels *All items listed above per partner pair*	• **BLM** Fruit Kabob-Snack Fractions • **BLM** Fruit Kabob-Snack Fractions Teacher Guide

Grades 5-6 Overview

Unit 4, Lesson 2 *The Clever Leprechaun* retold by Batt Burns

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine **Unit 4, Lesson 2** 30 – 45 minutes	Solve problems using a measurement tool and calculating measurements. Model and solve multistep word problems. Solve problems involving fractions, ratios, and proportions. Solve for a variable. Compose and decompose numbers.	Speak to partners, teacher, and class using vocabulary. Discuss problem solving process and strategies.	**Essential:** • Measurement Lab • Solve It! Problems • Fraction Action • *X* Marks the Spot • CGI **Optional:** • Target Number 15 • Money Matters	• Leprechaun Golden Nuggets (different sized gravel, pebbles, and rocks spray painted gold) • balance • 1 ounce weights (or objects that weigh the equivalent – slice of bread, AA battery, or a CD) • 1 pound weight (or objects that weigh the equivalent – 4 sticks of butter, a shoe, football, or a loaf of bread)	• **BLM** Worth Your Weight in Gold-Measurement Lab Record Sheet • **BLM** Worth Your Weight in Gold-Measurement Lab Record Sheet Teacher Guide • **BLM** Solve It! Problem 2 • **BLM** Fraction Action and *X* Marks the Spot • **BLM** Lessons 1-3 CGI *The Clever Leprechaun*
Classroom **Lesson 2** 1 hour – 1.5 hours	Use models to relate decimals to fractions. Generate equivalent forms of rational numbers including whole numbers, fractions, and decimals. Compare and order non-negative rational numbers.	Use the context of the sentence to determine the meaning of unfamiliar words or multiple meaning words Summarize and explain the lesson or message of a work of fiction as its	apprentice prosperous haunt secluded wily hapless crevice anguished	• blue painter's tape or masking tape	• **BLM** Fraction and Decimal Cards-B (2 pages) • **BLM** Fraction and Decimal Cards-B Teacher Guide • **BLM** folktale elements/plot chart

		theme Listen attentively to speakers, ask relevant questions, and make pertinent comments Write literary texts to express their ideas and feelings about real or imagined people, events, and ideas	writhe agony **Transition to Math** Students identify benchmark fractions and decimals on a number line while finding equivalencies through all four representations of a fraction. (thirds)		
TV **Lesson 2** 30 minutes	Add and subtract positive rational numbers fluently.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Students explore and practice how to convert between decimals and fractions to solve problems.		• **BLM** Equivalency Chart from Lesson 1 (Lesson 2 only) • **BLM** The Clever Thirds
Follow-up **Lesson 2** 30 minutes – 1 hour *(including Snack Fractions)*	Use models to relate decimals to fractions. Generate equivalent forms of rational numbers including whole numbers, fractions, and decimals.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Practice and Application** Students will play the game Fractions and Decimal Memory A to practice finding equivalencies within all representations of fractions.		• **BLM** Fraction-Decimal Memory Game B Directions • Fraction-Decimal Memory Cards B (3 pages) • **BLM** Recursive Review Lessons 1-3
Snack Fractions	Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios and percents. Convert between fractions, decimals and percents. Estimate to find solutions to problems involving fractions, decimals and	Discuss how fractions, decimals, ratios and percents can be used to solve real-world problems.	Students will work in pairs and explore fraction and decimal concepts based on weight through fair-sharing a 100-calorie snack pack.	• balance (no weights necessary) • 2 100-calorie snack packs (heaviest weight possible) • 2 paper dessert plates • 2 paper towels *All items listed above per partner pair*	• **BLM** 100-Calorie Snack Packs-Snack Fractions • **BLM** 100-Calorie Snack Packs-Snack Fractions Teacher Guide

	percents.				

Grades 5-6 Overview

Unit 4, Lesson 3 *The Clever Leprechaun* retold by Batt Burns

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine **Unit 4, Lesson 3** 30 – 45 minutes	Solve problems using a measurement tool and calculating measurements. Model and solve multistep word problems. Solve problems involving fractions, ratios, and proportions. Solve for a variable. Compose and decompose numbers.	Speak to partners, teacher, and class using vocabulary. Discuss problem solving process and strategies.	**Essential:** • Measurement Lab • Solve It! Problems • Fraction Action • *X* Marks the Spot • CGI **Optional:** • Target Number 45 • Money Matters		• **BLM** The Leprechaun Within You-Measurement Lab Record Sheet • **BLM** picture of Brohgawn • **BLM** Solve It! Problem 3 • **BLM** Fraction Action and *X* Marks the Spot • **BLM** Lessons 1-3 CGI *The Clever Leprechaun*
Classroom **Lesson 3** 1 hour – 1.5 hours	Use models to relate decimals to fractions. Generate equivalent forms of rational numbers including whole numbers, fractions, and decimals. Compare and order non-negative rational numbers.	Use the context of the sentence to determine the meaning of unfamiliar words or multiple meaning words Summarize and explain the lesson or message of a work of fiction as its theme Listen attentively to speakers, ask relevant questions, and make pertinent comments Write literary texts to express their ideas and feelings about real or imagined people, events, and ideas	apprentice prosperous haunt secluded wily hapless crevice anguished writhe agony **Transition to Math** Students identify benchmark fractions and decimals on a number line while finding equivalencies through all four representations of a fraction. (tenths)	• blue painter's tape or masking tape • **5** 3x5 index cards per student	• **BLM** Fraction and Decimal Cards-C (2 pages) • **BLM** folktale elements/plot chart (lesson 2)

TV **Lesson 3** 30 minutes	Add and subtract positive rational numbers fluently.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Students explore and practice how to convert between decimals and fractions to solve problems.		• **BLM** Equivalency Chart from Lesson 1 (Lesson 3 only) • **BLM** The Clever Tenths (1 of 2) • **BLM** The Clever Tenths (2 of 2)
Follow-up **Lesson 3** 30 minutes – 1 hour *(including Snack Fractions)*	Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations. Use addition and subtraction to solve problems involving whole numbers and decimals. Add and subtract positive rational numbers fluently. Use ratios to describe proportional situations. Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models. Represent ratios and percents with concrete models, fractions, and decimals. Use ratios to make predictions in proportional situations.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Practice and Application** Students learn and play the Family Fun Game.	• Family Fun Generic Game Board • Family Fun Movement Cards • Unit 4 Family Fun Problem Cards for grades 5-6 (yellow) • Family Fun Answer Key for Unit 4 (all grade bands) • Unit 4 Family Fun Special 5^{th} – 6^{th} Game Instructions • game markers	• **BLM** Recursive Review Problems Lessons 1-3
	Use addition, subtraction,	Discuss how fractions,	Students will work in pairs	• 3 whole graham	• **BLM** Crackers and

Snack Fractions	multiplication and division to solve problems involving fractions, decimals, ratios and percents. Convert between fractions, decimals and percents. Estimate to find solutions to problems involving fractions, decimals and percents.	decimals, ratios and percents can be used to solve real-world problems.	and explore fraction and decimal concepts through fair-sharing crackers and peanut butter.	cracker sheets • 2 TBS peanut butter ****Allergy Warning – please substitute a different spread for the entire class if nut allergies are present.*** • 2 paper dessert plates • 2 paper towels *All items listed above per partner pair*	Peanut Butter-Snack Fractions -1 per student • **BLM** Crackers and Peanut Butter-Snack Fractions Teacher Guide

Project SMART/Math MATTERS 2014

Grade Level: 5-6	Unit 4 / Lessons 1 – 2 – 3

Daily Routine Math Objectives:
Solve problems using a measurement tool and calculating measurements.
Model and solve multistep word problems.
Solve problems involving fractions, ratios, and proportions.
Solve for a variable.
Compose and decompose numbers.

Daily Routine Language Objectives:
Speak to partners, teacher, and class using vocabulary.
Discuss problem solving process and strategies.

Unit Math Objectives:
Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.
Add and subtract positive rational numbers fluently.
Give examples of ratios as multiplicative comparisons of two quantities describing the same attribute.
Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models.
Represent ratios and prevents with concrete models, fractions, and decimals.
Use equivalent fractions, decimals, and percents to show equal parts of the same whole.
Give examples of rates as the comparison by division of two quantities having different attributes, including rates as quotients.

Unit Language Objectives:
Use the context of the sentence to determine the meaning of unfamiliar words or multiple meaning words
summarize and explain the lesson or message of a work of fiction as its theme
Listen attentively to speakers, ask relevant questions, and make pertinent comments
Write literary texts to express their ideas and feelings about real or imagined people, events, and ideas

Technology Objectives:
Use research skills and electronic communication, with appropriate supervision, to create new knowledge.

Vocabulary
Math: fraction, 4 Representations of a Fraction, decimal, benchmark, equivalent
Language: apprentice, prosperous, haunt, secluded, wily, hapless, crevice, anguished, writhe, agony

Lesson Sequence

- Daily Routine: 30 – 45 minutes
- Classroom Lesson: 1 hour – 1.5 hours
- Math Lesson: 30 minutes
- Follow-up including Snack Fractions: 30 minutes - 1 hour

This portion of the curriculum is NOT required, but should be used to supplement and enrich the Unit's activities.

Torn Construction Paper Art Project

Materials

- Mid-assessment
- **BLM** Solve It! Problem 1
- **BLM** Lessons 1-3 CGI *The Clever Leprechaun*

Enrichment Suggestions 5-6

Unit 4 ***The Clever Leprechaun***

Math Walk

Walk around the school and make a list and take pictures of three objects or items that:

1. weigh approximately one ounce
2. weigh approximately one pound
3. have the same exact height as Brohgawn (8.25 inches)
4. are divided into fourths
5. are divided into thirds
6. are divided into halves
7. are divided into tenths

As a collective group, create posters of each category and display the pictures on the posters.

Technology Connection

https://itunes.apple.com/us/app/gold-price/id293755872?mt=8
Gold Price – App on iTunes that allows you to track the value of gold all over the world.

More Curriculum Connection Ideas off the Web

- **Social Studies:**
  http://en.wikipedia.org/wiki/Folklore
  History and information about folklore
- **Science**:
  http://www.youtube.com/watch?v=0V8miZORg6Y
  Rainbow Instant Snow Experiment
  http://www.youtube.com/watch?v=Z0Zwjs6B39M
  Rainbow Silly Squares – Polymer Stackers
- **Art:**
  http://www.youtube.com/watch?v=eCOaBHfA66s
  Leprechaun craft out of household items.
  http://www.youtube.com/watch?v=Kr7lP3iduC4
  Clover keychain made of clay.
  http://www.youtube.com/watch?v=CP5ZeZhI9tQ
  Leprechaun wall hanging craft.
  Create a leprechaun related picture (rainbow, leprechaun, pot of gold, fairies, etc.) using torn construction paper and a glue stick. (similar to the picture shown)

Unit 4 OPTIONAL All-School Project

Because all grade bands will be reading, learning and researching within the same unit theme, we are offering OPTIONAL projects in which all ages can participate.

Unit Theme: Folktales

Unit 4: Folktale Presentations

Defined:
Students create scenery, props, costumes and script then perform their folktale to the rest of the school. The presentation might be a: live performance, choral reading, puppet show, shadow puppet show, PowerPoint presentation and live reading, radio broadcast, movie, or any other venue that you and your class decide upon. The presentation, however, should be part of a whole-school event during which each grade band presents the folktale read during this unit. 7-8 can participate by selecting one of the 4 books read thus far.

Materials:
- Materials are based on your chosen presentation venue.

Objectives: (add your own objectives to the project)
- Students understand the elements of a folktale.
- Students work cooperatively to produce a presentation of their folktale.
- Students write brief descriptions of the memorable images.

Procedures:
STAFF:
- Teaching staff should plan the all-school event ahead of time, selecting time, place, and name of all-school event such as Rooster Crow Productions or Sundown Theater, or Folktale Spin Productions, or whatever clever name you devise. Think about an MC for the event.
- It would be wise that the teachers select the presentation venue for the event based on the talents, resources and time each grade band teacher believes her/his class can contribute.
- You might be able to involve community leaders in helping students with costumes, props, script writing, etc. based on your production venue selections.

STUDENTS
- Students work into cooperative groups that will create various parts of the presentation based on the venue: script, costumes, scenery, sound-effects, etc. NOTE: Kinder and 1-2 will need much more guidance than 3-4 and 5-6 in the planning process.

1. Pull the components of the presentation together and practice.
2. Present the venue to the larger group in the main event

Unit 4 OPTIONAL All-School Project

Online Resources:
These videos are just examples of different types of visual presentations, not necessarily folktale presentations; but they can give you an idea of possible presentation venues.

- http://www.youtube.com/watch?v=eQY3h3kkhY4&feature=youtube_gdata – hard to hear, but show how simple the presentations can be
- http://www.youtube.com/watch?v=-2aAPKx_4MQ&feature=youtube_gdata – silent movies theme.
- http://www.youtube.com/watch?v=OxcY7bA2FPY&feature=youtube_gdata – slide show to music
- http://www.youtube.com/watch?v=T5QgL0jzFx8&feature=youtube_gdata – cartoons, captions, and crooning – interesting combo
- http://www.youtube.com/watch?v=U1n_pocRa1U&feature=youtube_gdata – movie of a fairy tale
- http://www.youtube.com/watch?v=tlz-rUuSdEw&feature=youtube_gdata – life-size diorama come to life
- http://www.youtube.com/watch?v=91MkLF55By4&feature=youtube_gdata – very young to older children involved in creating puppet shows.
- http://www.youtube.com/watch?v=M_uX5lhPb4I&feature=youtube_gdata – video a mixture of puppets and real life backdrop
- http://www.youtube.com/watch?v=nn646hwJwoU&feature=youtube_gdata – first grde presentation – hard to hear, but simple presentation style
- http://www.youtube.com/watch?v=sBlw6BRkCnM&feature=youtube_gdata – animation ideas for older children
- http://www.youtube.com/watch?v=I3NvkxNpjGg&feature=youtube_gdata – shadow play and choral reading
- http://www.youtube.com/watch?v=lhcu45ticaY&feature=youtube_gdata – Using “Book Writer”
- http://www.youtube.com/watch?v=d_F-4u0ygLc&feature=youtube_gdata Hmong folktale presentation
- http://www.youtube.com/watch?v=a8Nj3KDsA-U&feature=youtube_gdata – musical presentation by Kinders –
- http://www.youtube.com/watch?v=Qs-zlzALYNU&feature=youtube_gdata – OK, so this is like a Broadway musical, but, it’s cool
- http://www.youtube.com/watch?v=c5RlZN9fxzg&feature=youtube_gdata

Project Title: _____

Student Name: _____

Date: _____ Teacher: _____

Math MATTERS Project Rubric

	1 point	2 points	3 points	4 points	Score
Amount of Project Completed	Little effort made, most items are unaddressed or incomplete	Some parts of the project were addressed and complete	Most of the project parts were addressed and complete, a few may be missing	All parts of the project were addressed and complete	
Quality of Work	Could not read project, project poorly organized	Project was partially organized, many parts were confusing or unrelated	Project was mostly organized, a few parts may be confusing or unrelated	Project highly organized and all parts clearly related to the topic	
Use of Time and Effort	Did not use time effectively	Used some time effectively, but was often off task	Used most time effectively, occasionally off task	Student used all available time to the fullest	
Presentation	Student could not explain own project	Student needed to be prompted to explain own project	Student explained project with little prompting	Student easily explained the project and could answer questions	
				Total	

A total score of 12 or more points is needed to consider the project complete.

Notes:

Rubric is an adaptation of Rcampus Math Project Rubric: Fraction Word Problems
http://www.rcampus.com/rubricshowc.cfm?code=F945W8&sp=true&

Math Objectives
- Solve problems using a measurement tool and calculating measurements.
- Model and solve multistep word problems.
- Solve problems involving fractions, ratios and proportions.
- Compose and decompose numbers.

Language Objectives
- Speak to partners, teacher, and class using vocabulary.
- Discuss problem solving process and strategies.

Math Vocabulary
fraction
4 Representations of a Fraction
decimal
benchmark
equivalent

Literature Vocabulary
apprentice
prosperous
haunt
secluded
wily
hapless
crevice
anguished
writhe
agony

ELPS (*English Language Proficiency Standard*)
2D, 2E, 2H, 3B, 3D, 3H, 4C

CCRS (*College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.1., I.C.2., I.C.3., II.A.4.
ELA II.A.3., II.B.1., III.B.1.,
MATH I.B.1., II.A.1., IV.A.1., VIII.A.3., VIII.A. 4.

Assessed TEKS for this Unit
5th – 5.3H, 5.3K
6th – 6.4C, 6.4D, 6.4E, 6.5B,

Unit 4, Lesson 1 Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post-assessment. They are not optional.

ESSENTIAL

Measurement Lab
- **Lesson 1 – *omit***
- Lesson 2 – Worth Your Weight (6th assessment item 1,3,6)
- Lesson 3 – The Leprechaun Within You (5th assessment item 1,2,3)

Solve It! Multi-step problem solving
Lesson 1 - triads, 3-step (5th asmnt item 4, 5; 6th asmnt item 8)
Lesson 2 - triads, 3-step (5th asmnt item 4, 5; 6th asmnt item 7)
Lesson 3 - independent, 3-step (5th asmnt item 4,5; 6th asmnt item 4)

The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.

OPTIONAL

Target Number
- **Lesson 1 – *omit***
- Lesson 2 – Target Number 15
- Lesson 3 – Target Number 45

Money Matters
(*If you have a full program and wish to use this optional activity, you will find BLMs and Explanations on MAS Space.)*

6.5C	

CGI Problems for *The King with Horse's Ears: A Clever Leprechaun* Retold by

Parte-parte-entero	*Entero desconocido* Brohgawn elaboró__ zapatos negros y __ zapatos cafés en un año. ¿Cuántos zapatos elaboró ? 67, 102 105, 75 199, 108	*Parte desconocida* Brohgawn elaboró __ pares de zapatos. __ pares fueron cafés y lo demás negros. ¿Cuántos fueron negros? 78, 59 104, 37 161, 148	
	Multiplicacion	**Division de medicion**	**Division partitiva**
Agrupamiento y division	Brohgawn tenía __ ollas de oro. Había __ pedazos de oro en cada olla. ¿Cuántos pedazos de oro tenía Brohgawn? 27, 50 32, 150 423, 125	Brohgawn tenía__ monedas de oro. Había __ monedas en cada olla. ¿Cuántasollas habia? 160, 40 184, 46 588, 98	Brohgawn tenía __ monedas de oro. Metió el mismo número de monedas en cada uno de __ ollas. ¿Cuántas monedas había en cada olla? 380, 19 875, 35 3,750, 50
Razon	Brohgawn elabora __ zapatos por hora. Trabaja __ horas por semana. ¿Cuántos zapatos elabora en una semana? ¿Cuántos pares de zapatos elabora en una semana? 12, 40 14, 60 17, 53	Brohgawn elabora __ zapatos. Elabora __ zapatos cada turno de medio día. ¿Cuántos dias tardó? 555, 37 2,562, 42 1,058, 23	Brohgawn tardó __ días para elaborar ___ zapatos. Elaboró el mismo número de zapatos cada día. ¿Cuántos zapatos elaboró cada día? ¿Cuántos pares en un día? 31, 3,157 99, 1,683 365, 8,760
Precio	Brohgawn vende __ pares de zapatos por $__ cada uno en una semana. ¿Cuánto dinero gana por semana? ¿Por día? 28, 24.50 35, 16.95 42, 52.75	Brohgawn ganó $__ de vender zapatos. Cada par vendió por $__. ¿Cuántos pares vendió? 280.85, 25.39 356.40, 14.85 1,919.64, 37.64	Brohgawn ganó $__ de vender zapatos. Vendió __ pares. ¿Cuánto costó cada par? 413.77, 23 1,236.75, 17 1,637.95, 41
Comparar	*Diferencia desconocida* Brohgawn elaboró __ pares de zapatos antes de usar el cuchillo de mango plateado mágico y__ pares usando el cuchillo durante el mismo tiempo. 6, 72 17, 119 26, 130	*Cantidad desconocida* Brohgawn antes tardaba __ minutos parar elaborar un par de zapatos. El cuchillo de mango plateado mágico permite que lo hace __ veces más rápido. ¿Cuánto tiempo tarda ahora para elaborar un par de zapatos? 90, 3 120, 5 165, 11	*Referente desconocida* Brohgawn elabora __ zapatos por turno. Este es __ veces más rápido que el segundo duende más rápido. ¿Cuántos zapatos elabora el otro duende en un turno? 81, 3 180, 12 425, 5

Unit 4 CGI Problems for *The King with Horse's Ears: A Clever Leprechaun*

Part-Part-Whole	*Whole Unknown* Brohgawn made __ black shoes and __ brown shoes in a year. How many shoes did he make? 67, 102 105, 75 199, 108		*Part Unknown* Brohgawn made __ pairs of shoes. __ pairs were brown and the rest were black. How many were black? 78, 59 104, 37 161, 148
	Multiplication	**Measurement Division**	**Partitive Division**
Grouping and Partitioning	Brohgawn had __ pots of gold. There were __ gold pieces in each pot. How many gold pieces did Brohgawn have? 27, 50 32, 150 423, 125	Brohgawn had __ gold coins. There were __ coins in each pot. How many pots were there? 160, 40 184, 46 588, 98	Brohgawn had __ gold coins. He put the same number of coins in each of __ pots. How many coins in each pot? 380, 19 875, 35 3,750, 50
Rate	Brohgawn makes __ shoes per hour. He works __ hours per week. How many shoes does he make in a week? How many pairs of shoes in a week? 12, 40 14, 60 17, 53	Brohgawn made __ shoes. He made __ shoes per half-day shift. How many days did it take him? 555, 37 2,562, 42 1,058, 23	It took Brohgawn __ days to make __ shoes. He made the same number of shoes each day. How many shoes did he make per day? How many pairs per day? 31, 3,157 99, 1,683 365, 8,760
Price	Brohgawn sells __ pairs of shoes for $__ each in a week. How much money does he take in per week? Per day? 28, 24.50 35, 16.95 42, 52.75	Brohgawn took in $__ from selling shoes. Each pair sold for $__. How many pairs did he sell? 280.85, 25.39 356.40, 14.85 1,919.64, 37.64	Brohgawn took in $__ from selling shoes. He sold __ pairs. How much did each pair cost? 413.77, 23 1,236.75, 17 1,637.95, 41
Compare	*Difference Unknown* Brohgawn made __ pairs of shoes before using the magic silver-handled knife and __ pairs while using the knife in the same amount of time. How many times slower was making the shoes without the magic knife? 6, 72 17, 119 26, 130	*Quantity Unknown* Brohgawn used to take __ minutes to make a pair of shoes. The magic silver-handled knife helps him to make shoes __ faster. How long does it take to make a pair of shoes now? 90, 3 120, 5 165, 11	*Referent Unknown* Brohgawn makes __ shoes per shift. That is __ times faster than the next fastest shoemaking leprechaun. How many shoes does the other leprechaun make per shift? 81, 3 180, 12 425, 5

Unit 4 Lesson 1 – Daily Routines – Solve It! (triads) **5-6**
1 per partner pair

Problem 1:
Fabian paid a 15% tip on his $45 bill. How much tip did he leave?

- What is the answer to the question? Show your solution strategy.

Problem Solution (Partner #1) Name:	**Solution Verification** (Partner #2) Name:

Problem 2:
Chelsea left a 20% tip on her $32 bill. How much tip did she leave?

- Do you need any information from Problem 1 to solve Problem 2?
- What is the answer to the question? Show your solution strategy.

Problem Solution (Partner #2) Name:	**Solution Verification** (Partner #3) Name:

Problem 3:
Who left more money on the table for the tip? By how much more?

- What information do you need from Problem 1 and 2 to solve Problem 3?
- Be sure to verify the answers to Problem 1 and 2 before solving Problem 3.
- What is the answer to the question? Show your solution strategy.

Problem Solution (Partner #3) Name:	**Solution Verification** (Partner #1) Name:

Unit 4 Lesson 1 – Daily Routines – Solve It! (triads) **5-6**
1 per partner pair

Problem 1:
Fabián pagó una propina del 15% de su factura de $45 ¿Cuánto propina dejó?

Problem Solution (Partner #1) Name:	**Solution Verification** (Partner #2) Name:

Problem 2:
Chelsea dejó una propina del 20% de su factura de $32. ¿Cuánto propina dejó? Do you need any information from Problem 1 to solve Problem 2?

- ¿Cuál es la respuesta a la pregunta? Muestra tu estrategia de solución.

Solución del problema (#1) Nombre:	**Verificación de la solución (**#2**)** Nombre:

Problem 3:
¿Quién dejó mayor propina y por cuánto más?

- ¿Qué necesitas del problema 1 para resolver este problema?
- Asegúrate de verificar la respuesta del problema 1 y 2 antes de resolver este problema.
- ¿Cuál es la respuesta a la pregunta? Muestra tu estrategia de solución.

Solución del problema (#1) Nombre:	**Verificación de la solución (**#2**)** Nombre:

Materials
- **BLM literature vocabulary cards**
- **BLM Close summary (optional activity)**
- **BLM** Fraction and Decimal Cards-A (2 pages)
- **BLM** Fraction and Decimal Cards-A Teacher Guide
- blue painter's tape or masking tape

Literature Selection
The King with Horse's Ears
retold by Batt Burns
selection ***A Clever Leprechaun***
p.77

Math Vocabulary
fraction
4 representations of a fraction
decimal
benchmark
equivalent

Literature Vocabulary
apprentice
prosperous
haunt
secluded
wily
hapless
crevice
anguished
writhe
agony

ELPS (*English Language Proficiency Standard*)
1C, 2D, 2F, 3B, 3D, 4G, 4J, 4K

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.A.2., I.F.1., II.A.2., II.A.3., II.A.4.
ELA II.A.1., II.A.3., II.A.4., II.A.5., II.A.10., II.C.2.

Technology Option

Teacher Note

Unit 4, Lesson 1 — Grades 5-6

Classroom Lesson

Every day teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

Math Objectives:
- Use models to relate decimals to fractions.
- Generate equivalent forms of rational numbers including whole numbers, fractions, and decimals.
- Compare and order non-negative rational numbers.

Language Objectives:
- use the context of the sentence to determine the meaning of unfamiliar words or multiple meaning words
- summarize and explain the lesson or message of a work of fiction as its theme
- listen attentively to speakers, ask relevant questions, and make pertinent comments
- write literary texts to express their ideas and feelings about real or imagined people, events, and ideas

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BEFORE READING
Building Background – Vocabulary& Literature
Reveal the literature vocabulary cards one at a time to the students and display in a pocket chart or board. Follow the same line of discovery questioning for each word.
Point the first word (*apprentice)*

Ask: Who can read this word?
Allow several students to respond
Say: Read the word aloud with me.
Read the together. Then, ask students to reread the word a loud after you.
Say: place your hands on either side of your lower jaw (cradling your jaw lightly) as you say the word in parts.
Example: ap-pren-tice
Ask: How many times did your jaw drop or your mouth open?
Allow for responses.
Say: Your mouth opened three times, so this word has three syllables or three parts.
Ask: Who has heard this word used before or read it before today?
Allow for responses.
Say: I think I've heard this word and seen it on TV. There is a

Vocabulary discovery:

- **prosperous:**
  3 syllable (pros-per-ous) adj
  Sample sentence- *We wish you a prosperous New Year!*
  Definition- bringing wealth and success.
  Synonym: successful, strong, profitable
  Antonym: poor, ailing
  Origin: Latin – prosperus (doing well)

- **haunt:**
  1 syllable, noun
  Most will be familiar with the haunt as in haunted house which is haunted (verb).

  Sample sentence- *Fiona and her friends walked along the river to their favorite haunt in a quite spot among the tall trees.*
  Definition- a place frequented by a specified person or group of people.
  Synonym: hangout
  Origin: Old French – hanter (related to home)

- **secluded:**
  3 syllable (se-clud-ed) adj
  Sample sentence- *The secluded spot was tucked away from the busy foot traffic.*
  Definition- not seen or visited by many people; sheltered and private
  Synonym: sheltered, hidden, secluded
  Antonym: busy
  Origin: Latin *secludere*, from *se-* 'apart' + *claudere* 'to shut'.

- **wily:**
  2 syllable (wil-y) adj
  Sample sentence- *The leprechaun is known as a wily trickster.*
  Definition- skilled at gaining an advantage, especially deceitfully, meant to trick
  Synonym: shrewd, clever, smart
  Antonym: naïve
  Some students might know the

---

show called Celebrity Apprentice. Celebrities will do work for the owner of the corporation in order to learn the business.
Ask: where have you heard or seen the word?
Allow for students to share or share another time you've heard/seen the word.

Ask: What part of speech do you think apprentice is? I'll use it in a sentence.

Sean decided to be an apprentice to an electrician after he graduated.

Allow students to respond.
Say: Apprentice is a noun used in this sentence.
Ask: What is a noun? Allow for responses.
Say: Apprentice comes from the Latin word *apprendere* meaning to apprehend and also French *apprendre* meaning to learn.
Ask: What are some words that mean the same as apprentice?
Turn to your neighbor and share.
Allow students to share their words with class.
Possible words: *trainee, starter, beginner, novice*

Ask: What would be the opposite of an apprentice?
Turn to your neighbor and share your thoughts.
Allow students to share with class.
Possible words: *veteran, expert, old timer*

Ask: Who can use the word in a sentence?
Say: Turn to your shoulder partner and tell them the sentence. Each person should share a sentence.

Continue in the same manner of discovery questioning for each word on the literature vocabulary list. Add in questions that expand the connection of the vocabulary to real life. Other questions include: *Why is (vocabulary word) important to us? What does (vocabulary word) also make you think of? What do you think the opposite of (vocabulary word) might be? What are other words that sound the same?*

Upon completion of the list, have students reread each word aloud in class together benefiting the proficient and non-proficient English speaker through repeated exposure

roadrunner and coyote from cartoons- wily is the word meaning for WIL.E.Coyote.

- **hapless:**
  2 syllable (hap-less) adj
  Sample sentence-*The hapless fisherman went home empty handed to his hungry family.*
  Definition- unfortunate, not lucky- especially as in a person.
  Synonym: unfortunate, unlucky
  Antonym: lucky, fortunate
  Origin: Middle English *hap* meaning good fortune + *less* meaning without.

- **crevice:**
  2 syllable (crev-ice) noun
  Sample sentence- *The river water began to leak through the tiny crevice in the dam.*
  Definition- narrow opening in a rock or wall,
  Synonym: crack, nook, cranny, fissure
  Origin: Latin *crepare* 'to rattle, crack.'
- **anguished:**
  2 syllable (an-guished) adj.
  Sample sentence- *The man let out with a sudden anguished yell .*
  Definition- experiencing severe mental or physical pain, suffering
  Synonym: painful
  Antonym: wonderful
  Origin: Latin *angustiare* 'to distress,' from Latin *angustia*

- **writhe:**
  1 syllable, verb
  Sample sentence- *She lay on the floor holding her hand and writhing in pain.*
  Definition- make continual twisting, squirming movements with body, twist your body from side to side.
  Synonym: squirm, wriggle, toss
  Origin: Old English *wrīthan* 'make into coils, plait, fasten with a cord,'

Unit 4, Lesson 1 — Grades 5-6

Classroom Lesson

NOTE: To build your students background knowledge bring in additional library books with pictures of Ireland, globe or map, and any online resources (some have been provided). ***Preview*** *all online sites prior to students watching to ensure their connection and appropriateness*.
The links provide videos, photographs, and insight as into the culture, legends, and other folktales of Ireland.

www.timeforkids.com/destination/ireland

http://kids.nationalgeographic.com/kids/places/find/ireland

SAY: Many countries and cultures have stories (tales) or legends that are retold by folk generation after generation orally. Some of the stories are told to explain why something is as it is or how something in nature came to be. These specific folktales that tell why are called pourquoi stories. Pourquoi (write on board) is French for 'why'.
SAY: We will be reading a folktale from Ireland. The folktale has been told for generations orally by people in Ireland.
The title is "A Clever Leprechaun". Before we read the folktale let's think about what we know about Ireland because this is where the story originates and it will help us better understand the setting, as well as the characters in the tale.

ASK: What have you heard, learned, or read about Ireland?
Allow students to respond. You may even add brief statements that you know. Do not correct students' prior knowledge if incorrect knowledge is presented.
List the ideas or thoughts on the board or on chart paper.
Encourage students to tell you anything they might have heard, seen, or remember from other classes about Ireland's land, people, culture, history, way of life, etc. If no students mention the potato famine, perhaps mention this historical event briefly.

Locate Ireland on the globe or map (maps are available with online links provided). Discuss the other countries nearby Ireland.

Show students the cover of the book.
ASK: Why do you think the title is *The King with Horse's Ears*?
What makes you think that?

- **agony:**
  3 syllable (ag-o-ny) noun
  Sample sentence-*He was in terrible agony after breaking his leg.*
  Definition-intense pain of mind or body
  Synonym: pain, hurt
  Antonym: pleasure
  Origin: Greek *agōnia*, from *agōn* 'contest'.

Unit 4, Lesson 1 — Grades 5-6

Classroom Lesson

SAY: Let's read and find out why Batt Burns, the author, likes folktales so much so that he wrote a book …by the way, the author grew up in the Kerry Hills of Ireland. He divides his time between the United States and Ireland. He was an apprentice to his grandfather, a master storyteller in Ireland and was a former elementary school principal in Ireland.
http://www.battburns.com/about.htm
NOTE: Additional to this site, there is a 2 min video available online of Batt Burns speaking at West Hartford. He explains his childhood listening to folktales and carrying on the tradition.
http://www.dailymotion.com/video/xf41ex_irish-storyteller-batt-burns-visits_news

DURING READING
Comprehensible Input - Vocabulary & Literature
Begin with reading aloud to students modeling your reading processes one at a time in a think-aloud. The purpose of reading the introduction is to clarify prior knowledge and to build background knowledge.

SAY: As we read today we are going to listen for new information we did not know about Irish culture and Ireland. We might even discover we were incorrect in some of our prior knowledge.

Begin reading Introduction.
Pg. 6 Begin reading from "*I was fortunate to…*" Stop after reading "*…the impoverished Ireland of those days.*"
SAY: The introduction is written in first person. Who is speaking?
ASK: What happened to most of the author's grandmother's twelve children?
SAY: The author stated Ireland was impoverished. What do you think this word means? What makes you think that?
Let's break the word down and determine its meaning. Look at the end of the word.
ASK: Do you see a suffix? What does –ed mean?
SAY: The word's root is Old French, *povre* meaning poor. –ish can mean having qualities of or having characteristics of.
ASK: With this knowledge, what do you think the word means? Turn to your neighbor and share.
SAY: The opposite of impoverished is rich or wealthy. Impoverished means… (allow the students to reply).

Begin reading from "*I stepped into the world…*" Stop after

reading *"…which he could get poor people out of trouble."*
ASK: Why do you think the author likes stories or folktales? Turn to your neighbor and share.
Allow students to share with class.

Encourage popcorn reading at this point, if students have not been reading aloud.
Begin reading from "*Radio and TV…"* Stop after reading *"…of the Wee Folk."*
ASK: How did the author connect the folktale stories to his own life experiences?
SAY: Look back at the text we've just read. What are some examples of how the author brought folktales to life for himself?
Allow students to respond.
ASK: Why do you think the author wrote this book? What makes you think this?

Begin reading from "*My purpose in writing…"* Stop after reading *"…worries, and powers our imaginations."*
ASK: Was your prediction for the author's purpose correct?
What helps you forget things that bother you? What do you think the author would tell you to do to forget the things that bother you?
Why do you think that?

Begin reading from *"When selecting tales…"* Stop after reading *"…own large collection of folktales."*
ASK: What was this passage mostly about? Name two famous Irish writers the author spoke about.

Create connections to the reading through visiting online resources for Irish authors or bring actual book in for students to look through written by two or three of the authors listed.
http://www.ranker.com/list/famous-irish-authors/info-lists

Set the students up for partner reading.
While sitting next to partner, direct students to read silently the remainder of the introduction. Then they will reread the same segment with their partner.

SAY: Read the remainder of the introduction and find out where the author got his folktales for this book from.
Begin reading from "*Some stories in my collection…"* Stop after completing page 7.

SAY: Throughout the introduction we've heard the author use the Gaelic

Teacher Note
The math objectives covered in the Transition to Math Lesson are not assessed items, but do lay the foundation for understanding the concepts taught in the TV Lesson. This activity is necessary and relevant.

Figure 1

word 'seanachie' pronounced shan-ock-kee. Using the context clues, what do you think this word means? What makes you think this? Allow students to share their thoughts.

SAY: The end of this book has a glossary for the Irish or Gaelic words used in this book. Let's look up seanachie in the glossary and see if we are correct.

Discuss with students the similarities and differences from Irish (Gaelic) with their home language, as well as with English. Explain that these words might be difficult to read, but we will read them the best we can with pronunciation.

Visit a previewed online resource for examples of the Irish (Gaelic) alphabet. http://www.omniglot.com/writing/irish.htm

AFTER READING
Practice and Application – Vocabulary & Literature
Revisit the information students generated at the beginning of class about Ireland. Correct any prior knowledge that has been covered with the reading and or online (additional) resources.

Options depending on time remaining:

1. Students partner up and orally share their predictions for what the upcoming folktale will be about: The Clever Leprechaun. Write the predictions and students may vote on the one they thing is correct.

2. Students reread the *introduction* with a partner (or group) and complete the cloze activity as a summary. Students reconvene as a class and share their responses. There can be multiple responses to the blanks for the cloze. Encourage the students to reread their summary to make sure it makes sense.

ELPS (*English Language Proficiency Standard*)
1E, 2E, 2G, 3B, 3D, 3F, 4F, 4H

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.C.1., I.C.2., II.A.2., II.D.1.
MATH I.B.1., VI.B.1., IV.B.1., IV.B.2., VI. B.4.

Transition to Math

Students already used equivalent decimals, fractions, and ratios with benchmarks in previous unit lessons with a strip diagram. This skill was embedded within the number sense strategies practiced in different activities and problems. This activity will allow students the opportunity to visualize the many different equivalencies between the 4 representations of a fraction and decimals on a number line. They will complete the same number line activity during the Transition to Math time in Lessons 2 and 3, but with different benchmarks and whole numbers.

Activity Focus:

- benchmark fractions **one-fourth, one-half, three-fourths**
- equivalencies between the 4 representations of a fraction and decimals

Activity Directions:

- Initial Prep - Using blue painters tape, create a horizontal number line on the wall big enough to hold all of the Fraction and Decimal Cards. Only provide tick marks where **0, 1, and 2** will be placed. However, do not label the whole numbers. Shown in Figure 1.
- Initial Prep – Cut out Fraction and Decimal Cards. Divide into equal groups based on number of student groups.
- Divide students into groups of three or four.
- Provide them with a set of random Fraction and Decimal Cards.
- Allow students to work within their own groups, between groups, and as a whole class to correctly place the cards on the number line.
- Hold a whole class discussion and analyze the card placements. Focus on the equivalencies.

Questions to ask:

- How did you know that card should be placed in that particular spot?
- Did you have to adjust any of the cards? Why?
- Is this an area model or set model? How do you know?
- When do you see these benchmarks in real life?

Students may finish this activity during the Follow-up Lesson if needed.

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Duplicate on cardstock and cut apart for word cards.

apprentice

prosperous

haunt

secluded

wily

Duplicate on cardstock and cut apart for word cards.

hapless

crevice

anguished

writhe

agony

aprendiz

próspero

lugar predilecto

aislado

astuto

Duplicate on cardstock and cut apart for word cards.

infortunado

grieta

angustioso

retorcerse

agonía

Unit 4 Lesson 1 – Classroom Lesson **Cloze Summary**
One per partner

The author shares his personal experiences with _____ storytelling by giving a brief description of his childhood in _____. The author's _____ was a traditional storyteller and also lived as a farmer. His grandfather's stories included some traditional phrases spoken in _____.

As the author wrote this book, he flashes back to vivid _____ of magical, far-off days listening to his grandfather's _____. Many nights he recalls pleading for more _____. The reader can tell from the author's description, that he _____ Irish folktales.

The magic of the folktales was described by the author as being in the physical _____ of his grandparents' farm. The author tells of a _____ that was tossed to its location by a great hero fifty miles away and walks home from school through the _____ fort. Through these stories, the author kept a respect for the _____ _____.

The author's purpose for writing the book is to _____ the magic for the reader he experienced as a _____. When selecting the folktales, he retold stories from his_____ and from local _____. One storyteller's gift of imagination and expression inspired the author's writing of the tale "_____ _____ _____".

The author has been sharing stories for over _____ years and finds the greatest reward when he looks at the light of _____ in his audiences eyes. It is his hope that the stories included in this _____ will give us glimpse into the culture and traditions of _____ and maybe inspire us to become a _____.

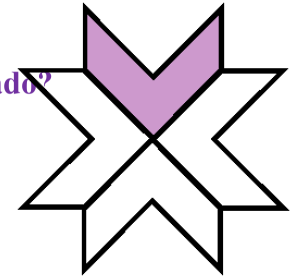
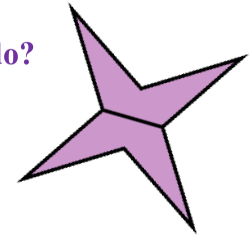
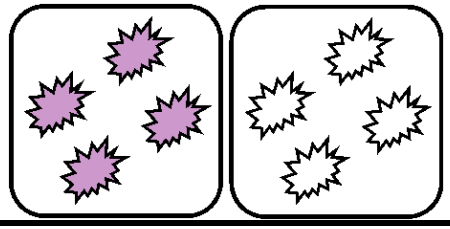
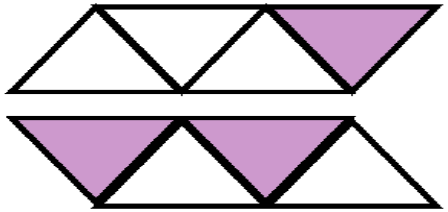
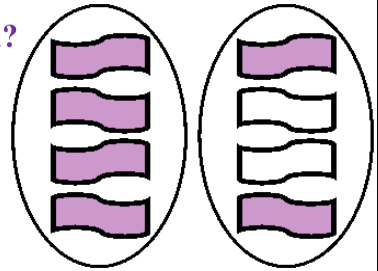
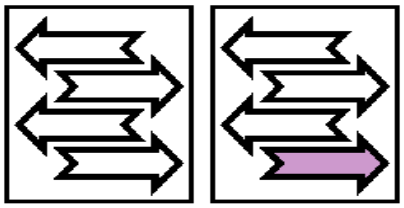
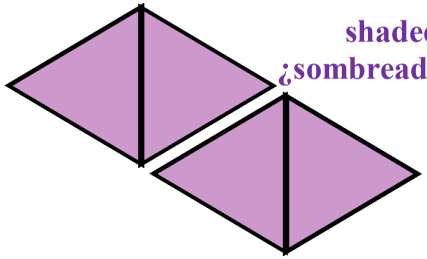
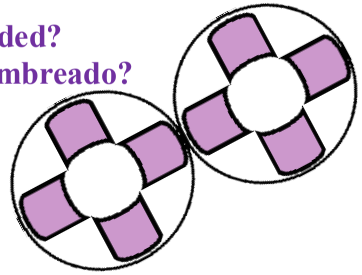
Unit 4 Lesson 1 – Transition to Math
One set per class

Fraction and Decimal Cards - A (1/2)

0	1	2	$\frac{1}{4}$
$\frac{2}{4}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{4}{4}$
$1\frac{1}{4}$	$1\frac{2}{4}$	$1\frac{3}{4}$	$1\frac{1}{2}$
$\frac{4}{2}$	$\frac{8}{4}$	0.25	$0.50

Unit 4 Lesson 1 – Transition to Math
One set per class

Fraction and Decimal Cards - A (2/2)

0.750	$1.00	1.250	1.5
$1.75	2.000	shaded? ¿sombreado? 	missing? ¿falta? 
shaded? ¿sombreado? 	shaded? ¿sombreado? 	shaded/sombreado 	unshaded? ¿no sombreado> 
shaded? 	unshaded? 	shaded? ¿sombreado? 	shaded? ¿sombreado? 

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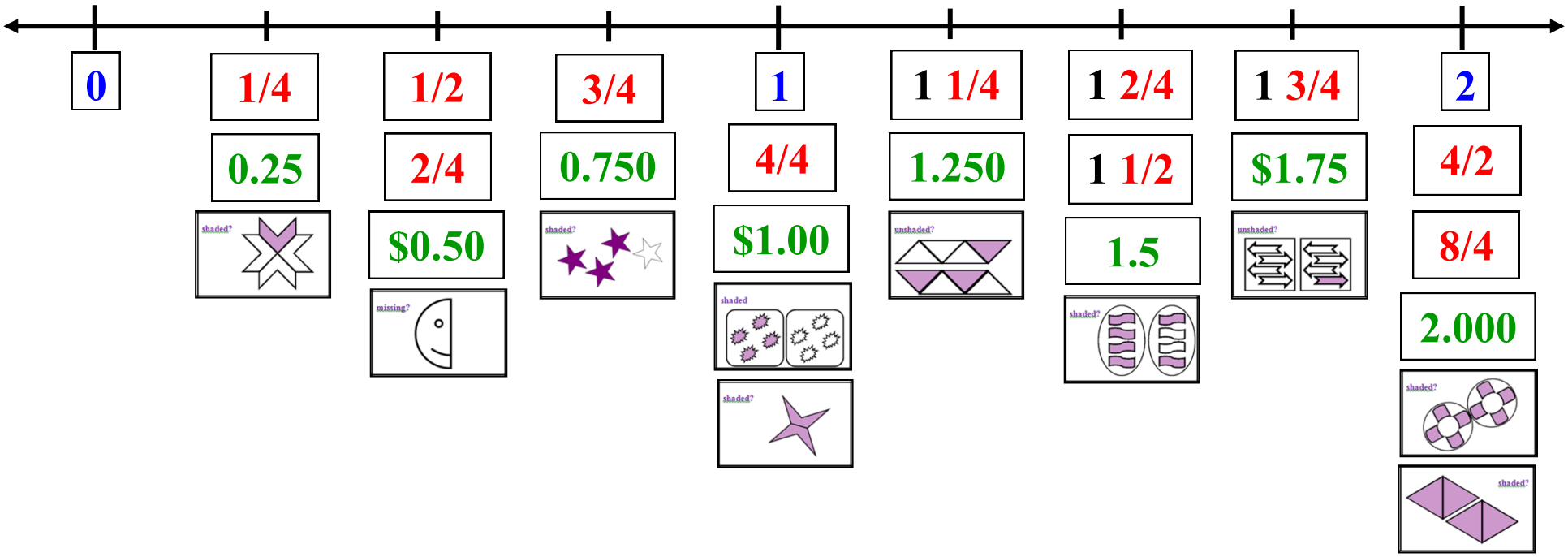
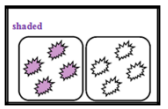
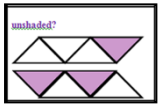
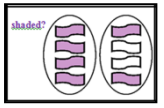
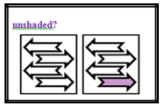
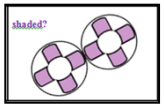
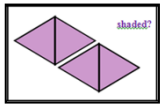
Unit 4 Lesson 1 – Transition to Math
Teacher Copy

Fraction and Decimal Cards - A Teacher Guide



Clarification for Pictorial Models

$\frac{1}{4}$ Area Model 	$\frac{1}{2}$ Area Model 	$\frac{3}{4}$ Set Model 	$\frac{4}{4}$ Set Model 
$\frac{2}{2}$ Area Model 	$\frac{5}{4}$ or $1\frac{1}{4}$ Area Model 	$\frac{6}{4}$ or $1\frac{2}{4}$ Set Model 	$\frac{7}{4}$ or $1\frac{3}{4}$ Set Model 
$\frac{8}{4}$ Set Model 	$\frac{4}{2}$ Area Model 		

Materials
- **BLM** Equivalency Chart (Lesson 1 only)
- **BLM** The Clever Halves and Fourths

Math Vocabulary
fraction
4 representations of a fraction
decimal
benchmark
equivalent

Literature Vocabulary
apprentice
prosperous
haunt
secluded
wily
hapless
crevice
anguished
writhe
agony

ELPS (*English Language Proficiency Standard*)
1E, 1F, 2G, 3D, 3F, 3H, 4F, 5B, 5C

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.1., I.C.2., I.E.1., II.B.2.
ELA I.A.2., II.A.2., II.A.3., III.B.2., IV.A.3.
MATH I.B.1., I.C.1., II.B.1., II.C.1., IV.B.1., VIII.A.1., VIII.A.3., VIII.A.4.

Unit 4, Lesson 1 — Grades 5-6

TV Lesson

Math Objectives:
- Add and subtract positive rational numbers fluently.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Building Background
Students solved mixed rational number problems in previous units. However, this is an official lesson covering solution strategies. It is likely they developed different strategies while working with peers and classroom teachers during the school year and summer program. This unit will not only provide practice converting between decimals and fractions, but also relate them to the unit by which they are measuring. For example, a quarter of an hour has a different value than a quarter of a dollar.

They will use the knowledge of benchmark fractions, decimals, and equivalencies gained in the Transition to Math number line activity during the TV Lesson.

Comprehensible Input
Students will solve problem situations that involve adding and subtracting positive rational numbers. However, the word problems use specific fractions *(halves and fourths)* and decimals to allow students extra practice with benchmarks and equivalencies. Students are encouraged to continue to practice mental math strategies to find solutions.

The problems on the BLM can be solved by either changing all quantities to decimals or fractions. Both solution strategies are covered in this lesson. Students should first fill in the Equivalency Chart to make relationships between the unit of measure to the fractions and decimals. Complete Lesson 1 Chart only.

Problem #1 – Decimals to Fractions
"What do we know about this problem? What information is important?" *(princess shoes = 1/2 hour and parents shoes = 1.75 hours, and finding time altogether)*

"How do you think we should solve this problem?" *(add the times together)*

Students will follow along with the TV teacher and change the decimals to fractions for this particular problem.

"Since we're changing decimals to fractions, do I need to convert the half-hour?" *(No, it is already a fraction.)*

"Then how would I change 1.75 hours into a fraction?" Let students discuss their ideas with an elbow partner. There is one full hour and three-quarters of another hour or three-fourths. Remind students to think in terms of money when dealing with decimals because quarters *(coin)* are a direct relationship.

New equation: $\frac{1}{2} + 1\frac{3}{4} = ?$

The intent at this point is to have students think of the fractions in terms of the unit of measure. Mental math strategies should be sufficient, especially with the help of the Equivalency Chart. Do NOT make students walk through the process of finding a common denominator to add the fractions. It is more important that they understand the meaning of the fractions rather than focus on a calculation process.

$\frac{1}{2}$ = 30 mins and $\frac{3}{4}$ = 45 mins. There are various ways to "chunk" or piece the times together in order to combine them *(15's or 30's, etc.)*. *(It will take Bohgawn 2 hrs and 15 mins to complete all three pairs of shoes.)*

Teacher Note
Common misconception:
When dealing with "quarters" students automatically think the value is 0.25 or 25.

Problem #2 – Fractions to Decimals
Follow the same process except change the fraction to a decimal.

New equation: 0.25 + 0.25 + 0.5 = 1 pound

Again, the intent is to have students think in terms of the unit of measure. Pounds can be broken into ounces. 16 oz. = 1 pound. In other words, their thought process could be:

(4 oz.) + (4 oz.) + (8 oz.) = 1 pound of gold altogether

Students will fill in the rest of the chart for both problems. They may use time during the Follow-up Lesson if needed.

Pirate's Corner
Can you think of another example of when a "quarter" has a different value? If so, go to MAS Space and tell Captain Portio and the TV Teacher!

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 4 Lesson 1-3 – TV Lesson
Duplicate on cardstock and cut apart for word cards.

fraction

4 representations of a fraction

decimal

benchmark

equivalent

fracción

cuatro representaciones de una fracción

de referencia

Unit 4 Lessons 1-3 – TV Lesson

Equivalency Chart

The charts below show you the values of benchmark fractions and decimals within each unit of measure.

Lesson 1						
Fraction	**Decimal**	**Percent**	**Money**	**Time**	**Feet**	**Pounds**
$\frac{1}{4}$		**25%**		**15 mins.**		**4 oz.**
	0.50				**6 inches**	
			$0.75			

Lesson 2						
Fraction	**Decimal**	**Percent**	**Money**	**Time**	**Feet**	**Dozen**
$\frac{1}{3}$		**33%**		**20 mins.**		**4**
	0.66				**8 inches**	
			$1.00			

Lesson 3						
Fraction	**Decimal**	**Percent**	**Money**	**Time**	**Meter**	**Pounds**
$\frac{1}{10}$			**$0.10**	**6 mins.**		**1.6 oz.**
	0.5				**5 cm**	

Unit 4 Lessons 1-3 – TV Lesson

Tabla de equivalencias

Las tablas abajo muestran los valores de las fracciones y decimales de referencia dentro de cada unidad de medición.

Lesson 1						
Fracción	**Decimal**	**Porcentaje**	**Dinero**	**Tiempo**	**Pies**	**Libras**
$\frac{1}{4}$		**25%**		**15 mins.**		**4 oz.**
	0.50				**6 pulgadas**	
			$0.75			

Lesson 2						
Fracción	**Decimal**	**Porcentaje**	**Dinero**	**Tiempo**	**Pies**	**Docenas**
$\frac{1}{3}$		**33%**		**20 mins.**		**4**
	0.66				**8 pulgadas**	
			$1.00			

Lesson 3						
Fracción	**Decimal**	**Porcentaje**	**Dinero**	**Tiempo**	**Metro**	**Libras**
$\frac{1}{10}$			**$0.10**	**6 mins.**		**1.6 oz.**
	0.5				**5 cm**	

Unit 4 Lesson 1 – TV Lesson

The Clever Halves and Fourths

Work with your teacher and in groups to solve the problems.

1. Brohgawn was requested by Cliodhna, the fairy queen of Munster, to make new shoes for her daughter, the King of Munster, and herself for the royal Summer of Lights Festival. Brohgawn new the young fairy princess's shoes would only take $\frac{1}{2}$ an hour to complete. The king and queen's shoes would need 1.75 hours. How much time will it take to finish all 3 pairs of shoes?

Fraction	Decimal

2. During the Summer of Lights Festival, Brohgawn would hide gold in tiny pouches around Lissaree for the fairy children to find. In one pouch alone he put a nugget weighing $\frac{1}{4}$ of a pound. In another pouch he placed a nugget weighing 0.25 of a pound. But in the Grand pouch that all the little fairies hoped to find, he hid a pile of gold that weighed 0.5 of a pound. What is the total weight of the gold in these three pouches?

Fraction	Decimal

Unit 4 Lesson 1 – TV Lesson

Las mitades y los cuartos ingeniosos

Colabora con tu maestro y en grupos para resolver los problemas.

1. Cliodhna, la reina de las hadas de Munster, solicitó a Brohgawn que hiciera zapatos nuevos para su hija, para el Rey de Munster y para ella misma para el Festival real de las Luces de Verano. Brohgawn sabía que solo le levaría una hora terminar $\frac{1}{2}$ los zapatos de la joven princesa de las hadas. Para los zapatos del rey y de la reina, necesitaría 1.75 horas. ¿Cuánto tiempo le llevará terminar los 3 pares de zapatos?

Fracción	Decimal

3. Durante el Festival de las Luces de Verano, Brohgawn escondería oro en pequeñas bolsas alrededor de Lissaree para que los niños hadas las encontraran. En una sola bolsa puso una pepita que pesaba $\frac{1}{4}$ de una libra. En otra bolsa, colocó una pepita que pesaba 0.25 de una libra. Pero en la Gran bolsa que todas las pequeñas hadas esperaban encontrar, escondió una pila de oro que pesaba 0.5 de una libra. ¿Cuál es el peso total del oro en estas tres bolsas?

Fracción	Decimal

Materials
- **BLM** Fraction-Decimal Memory Game A Directions
- Fraction-Decimal Memory Cards A (3 pages)
- **BLM** Recursive Review Lessons 1-3

Math Vocabulary
fraction
4 representations of a fraction
decimal
benchmark
equivalent

Literature Vocabulary
apprentice
prosperous
haunt
secluded
wily
hapless
crevice
anguished
writhe
agony

Teacher Note
The math objectives covered in the Follow-up Lesson are not assessed items, but do support and reinforce the concepts taught in the TV Lesson. This activity is necessary and relevant.

ELPS (*English Language Proficiency Standard*)
1F, 2E, 2F, 2H, 3C, 3F, 4F, 4J, 5B

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.C.1., I.C.2., II.B.1., II.B.2.
ELA I.A.1., I.A.2., II.A.2., III.B.1., III.B.2., IV.A.3.
MATH I.B.1., I.C.1., II.B.1., IV.B.1., VIII.A.1., VIII.A.3.

Unit 4, Lesson 1 — Grades 5-6

Follow-up

Math Objectives:
- Use models to relate decimals to fractions.
- Generate equivalent forms of rational numbers including whole numbers, fractions, and decimals.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

If students did not finish the questions during the TV Lesson they may do so during this time.

Practice and Application
Students will play the game Fractions and Decimal Memory A. It is played in the same way as the classic game. Modifications are provided on BLM Fraction-Decimal Memory Game A Directions.

QUESTIONS
- How do you know those cards are equivalent?
- Are there any cards that seem more difficult than the others? Why?
- Justify the relationship you used for this set…

Recursive Review
Please use **BLM** *to answer the Recursive Review questions.*

- Mallory walked her dog a total of 7446.2 meters in one week. If by Wednesday she had already completed 4809.55 meters, how much farther did she walk after Wednesday?

Writing Topics
Independent Writing Topic
Students will have a daily writing activity which will incorporate the day's focus math vocabulary.

- **Why is the unit of measure (feet, hours, pounds, etc.) important when solving problems involving fractions and decimals?**

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 4 Lesson 1 – Follow-up
One per partner pair

Fraction-Decimal Memory Game A Directions

Materials:

- Full set of Fraction Decimal Cards A (54)

Procedure:
The object of the game is to correctly match as many equivalent fraction/decimal pairs as possible. Some cards are real world examples that can be represented with a fraction or decimal.

- Shuffle cards and arrange them face down in a 9 x6 array.
- Player 1 flips over two cards.
    - Match – player keeps pair and takes another turn.
    - Mismatch – player flips cards back to original position. Turn ends.
- Player 2 repeats process.
- Player with the largest number of matched pairs by the end of class is the winner!

Modifications:

- Laminate the cards so they can write the fraction or decimal equivalent directly on them. This will prevent students from having to "figure it out" each time the card is flipped over. Students may also use their Equivalency Chart from the TV Lesson.
  **Only do this with groups that are struggling with the concept. It is important that the rest of the class practice the equivalencies each time.*

- Match three cards at one time using a relationship within the fractional part. This variation takes more thought because the student must justify the relationship between all three cards. Allow students to use sticky notes to label the set with the relationship. Make sure to stop by this group often and have them explain their thinking. If you notice this group continues to make simple connections such as "all three cards have one-fourth," nudge them to make bigger leaps. Technically, all cards are related since they are halves and fourths. Let them discover that, though.

Unidad 4 Lección 1 –
Uno por pareja de compañeros

Instrucciones del juego de la memoria A de Fracción Decimal

Materiales:

- Juego completo de Cartas A (54) de Fracción Decimal

Procedimiento:

El objetivo del juego es unir correctamente la mayor cantidad posible de pares de fracciones/decimales equivalentes. Algunas cartas son ejemplos del mundo real que se pueden representar con una fracción o un decimal.

- Mezcla las cartas y acomódalas con la cara hacia abajo en un orden de 9 x 6.
- El jugador 1 da vuelta dos cartas.
    - Coincidencia - el jugador mantiene pares y tiene otro turno.
    - No coincidencia - el jugador vuelve a dar vuelta las cartas hacia la posición original. El turno termina.
- El jugador 2 repite el proceso.
- ¡El jugador con el mayor número de pares de coincidencias al final de la clase es el ganador!

Modificaciones:

- Lamine las cartas para que puedan escribir la fracción o el decimal equivalente directamente sobre ellas. Esto evitará que los estudiantes tengan que "descubrirlos" cada vez que se de vuelta la carta. Los estudiantes también pueden utilizar el Cuadro de equivalencias de la Lección TV.
  **Solo haga esto con aquellos grupos que tengan problemas con el concepto. Es importante que el resto de la clase practique las equivalencias cada vez.*

- Haga coincidir tres cartas a la vez utilizando una relación dentro de la parte fraccional. Esta variación requiere mayor consideración porque el estudiante debe justificar la relación entre las tres cartas. Permítale al estudiante utilizar notas adhesivas para etiquetar el juego con la relación. Asegúrese de hacer que este grupo se detenga a menudo y explique su razonamiento. Si usted nota que este grupo continúa haciendo conexiones simples, tales como "las tres cartas tienen un cuarto", anímelos a dar saltos más grandes. Técnicamente, todas las cartas están relacionadas dado que son mitades y cuartos. Sin embargo, permítales descubrir esto a ellos

Unit 4 Lessons 1 – Follow-up
One per partner pair

Fraction-Decimal Memory Cards A (1/3)

30 mins	$\frac{1}{4}$	$\frac{3}{4}$	$1\frac{2}{4}$	1 lb 4 oz	$1\frac{3}{4}$
2 hrs 30 mins	$2\frac{1}{4}$	$2\frac{3}{4}$	$3\frac{2}{4}$	$3\frac{1}{4}$	3 hrs 45 mins
$4\frac{1}{2}$	$4\frac{1}{4}$	$4\frac{3}{4}$	5 ft 6 inches	$5\frac{1}{4}$	$5\frac{3}{4}$

Unit 4 Lessons 1 – Follow-up
One per partner pair

Fraction-Decimal Memory Cards A (2/3)

$6\frac{1}{2}$	$6\frac{1}{4}$	$6\frac{3}{4}$	7 lbs 8 oz	$7\frac{1}{4}$	$7\frac{3}{4}$
8 hrs 45 mins	$8\frac{1}{4}$	$8\frac{3}{4}$	0.25	0.5	$0.75
1.250	$1.50	1.75	$2.25	2.50	2.750

Unit 4 Lessons 1 – Follow-up
One per partner pair

Fraction-Decimal Memory Cards A (3/3)

$3.25	**3.5**	**3.750**	**4 ft 3 inches**	**4.50**	**4.750**
5.250	**5.5**	**$5.75**	**$6.25**	**6.50**	**6 lbs 12 oz**
7.250	**7.5**	**$7.75**	**8.25**	**$8.50**	**$8.75**

Unit 4 Lessons 1-3 – Follow-up
One per student

Recursive Review Problems

Solve the recursive review problems using any strategy of your choice.

Unit 4 Lesson 1
Mallory walked her dog a total of 7446.2 meters in one week. If by Wednesday she had already completed 4809.55 meters, how much farther did she walk after Wednesday?

Unit 4 Lesson 2
Which of the following is NOT a true statement?

A. $\frac{3}{5} + \frac{2}{10} = \frac{4}{5}$

B. $\frac{6}{7} - \frac{1}{3} = \frac{11}{21}$

C. $\frac{9}{12} - \frac{1}{4} = \frac{6}{12}$

D. $\frac{6}{8} + \frac{1}{2} = \frac{7}{10}$

Unit 4 Lesson 3
It takes an average of 5 gallons of paint to cover the walls in 2 bedrooms. How many gallons of paint will be needed to paint ten rooms? *Use equivalent ratios to solve.*

Unit 4 Lessons 1-3 – Follow-up
One per student

Recursive Review Problems

Resuelve los problemas de repaso recursivo usando cualquier estrategia que elijas.

Unidad 4 Lección 1
Mallory llevó a caminar a su perro un total de 7446.2 metros en una semana. Si para el miércoles ya había completado 4809.55 metros, ¿cuánto más caminó después del miércoles?

Unidad 4 Lección 2
¿Cuál de las siguientes no es una afirmación verdadera?

A. $\frac{3}{5} + \frac{2}{10} = \frac{4}{5}$

B. $\frac{6}{7} - \frac{1}{3} = \frac{11}{21}$

C. $\frac{9}{12} - \frac{1}{4} = \frac{6}{12}$

D. $\frac{6}{8} + \frac{1}{2} = \frac{7}{10}$

Unidad 4 Lección 3
Se necesita un promedio de 5 galones de pintura para cubrir las paredes de 2 habitaciones. ¿Cuántos galones de pintura se necesitarán para pintar diez habitaciones? *Usa relaciones equivalentes para resolver el problema.*

Materials
- 2 skewers
- 16 – 1" cubes cooked meat
- 8 cubes pineapple
- 8 cheese cubes
- 8 cherry tomatoes
- 2 paper dessert plates
- 2 paper towels

All items listed above per partner pair
- **BLM** Fruit Kabob-Snack Fractions
- **BLM** Fruit Kabob-Snack Fractions Teacher Guide

Math Vocabulary
fraction
4 representations of a fraction
decimal
benchmark
equivalent

Literature Vocabulary
apprentice
prosperous
haunt
secluded
wily
hapless
crevice
anguished
writhe
agony

Unit 4, Lesson 1 Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios and percents.
- Convert between fractions, decimals and percents.
- Estimate to find solutions to problems involving fractions, decimals and percents.

Language Objectives
- Discuss how fractions, decimals, ratios and percents can be used to solve real-world problems.

Snack Fractions
The Snack Fraction activities for this unit will focus on combining and separating fractional parts as well as dividing into fourths. Students will go back to working in pairs. A Teacher Guide for the BLM is provided.

QUESTIONS
- What is the whole in this situation?
- How do I break this up into equal shares?
- What does that fraction represent?
- Does this fraction have an easily calculated decimal equivalent?
- How can you find the decimal of this fraction?
- How did you calculate the percent?

Once the activity is complete, let them enjoy their snack! *(If today's portion is too small, you may give them an additional pickle to eat.)*

Snack Fraction Journal Writing: BLM Fruit Kabob-Snack Fractions
Justify how it is possible for 12 meats out of 40 ingredients to be more than 50% of the ingredients.

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 4 Lesson 1 – Snack Fractions
One per student

Fruit Kabob – Snack Fractions

Divide the kabob ingredients equally between you and your partner. Once divided, spear the ingredients onto your skewer. Work with your partner to solve the problems.

1. Draw your kabob on the skewer provided below.

2. Based on your picture, fill in the chart below.

portion size	# of meat cubes	# of cheese cubes	# of pineapple chunks	# of cherry tomatoes	Total all ingredients
original portion					
your portion					
1 friend shares your portion					

Use the information in the chart to answer the following questions.

3. Fractional representation of your portion to the original portion = _____

4. Fractional representation of the friend's portion to original portion = _____

5. Fractional representation of the friend's portion to your portion = _____

6. $\frac{\text{your portion of meat}}{\text{original meat}}$ = _____ simplify = _____ percent = _____

7. $\frac{\text{friend's portion of cheese}}{\text{original cheese}}$ = _____ simplify = _____ percent = _____

8. $\frac{\text{friend's portion of pineapple}}{\text{your pineapple}}$ = _____ simplify = _____ percent = _____

9. Do the answers for 6 and 8 have the same value? Explain.

Unit 4 Lesson 1 – Snack Fractions
One per student

Brocheta de frutas – Fracciones de refrigerios

Divide los ingredientes de la brocheta de manera equitativa entre tú y tu compañero. Una vez que estén divididos, atraviesa los ingredientes por el pincho. Colabora con tu compañero para resolver los problemas.

1. Dibuja tu brocheta en el pincho provisto a continuación.

2. Basándote en tu imagen, completa el cuadro que se encuentra abajo.

tamaño de la porción	**# de cubos de carne**	**# de cubos de queso**	**# de trozos de piña**	**# de tomates cherry**	**Total de todos los ingredientes**
porción original					
tu porción					
1 amigo comparte tu porción					

Usa la información del cuadro para responder las siguientes preguntas.

3. Representación fraccional de tu porción a la porción original = _____

4. Representación fraccional de la porción de tu amigo a la porción original = _____

5. Representación fraccional de la porción de tu amigo a tu porción = _____

6. $\frac{\text{your portion of meat}}{\text{original meat}}$ = _____ simplificar = _____ porcentaje = _____

7. $\frac{\text{friend's portion of cheese}}{\text{original cheese}}$ = _____ simplificar = porcentaje = _____

8. $\frac{\text{friend's portion of pineapple}}{\text{your pineapple}}$ = _____ simplificar = porcentaje = _____

9. ¿Las respuestas para 6 y 8 tienen el mismo valor? Explica tu respuesta.

Unit 4 Lesson 1 – Snack Fractions
One per student

Fruit Kabob – Snack Fractions Teacher Guide

Divide the kabob ingredients equally between you and your partner. Once divided, spear the ingredients onto your skewer. Work with your partner to solve the problems.

1. Draw your kabob on the skewer provided below. pictures will vary

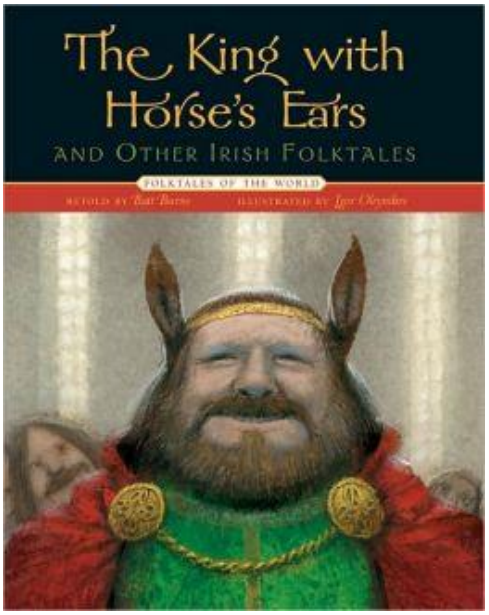
2. Based on your picture, fill in the chart below.

portion size	# of meat cubes	# of cheese cubes	# of pineapple chunks	# of cherry tomatoes	Total all ingredients
original portion	16	8	8	8	40
your portion	8	4	4	4	20
1 friend shares your portion	4	2	2	2	10

Use the information in the chart to answer the following questions.

3. Fractional representation of your portion to the original portion = $\frac{1}{2}$
4. Fractional representation of the friend's portion to original portion = $\frac{1}{4}$
5. Fractional representation of the friend's portion to your portion = $\frac{1}{2}$
6. $\frac{\text{your portion of meat}}{\text{original meat}} = \frac{8}{16}$ simplify = $\frac{1}{2}$ percent = 50%
7. $\frac{\text{friend's portion of cheese}}{\text{original cheese}} = \frac{2}{8}$ simplify = $\frac{1}{4}$ percent = 25%
8. $\frac{\text{friend's portion of pineapple}}{\text{your pineapple}} = \frac{2}{4}$ simplify = $\frac{1}{2}$ percent = 50%
9. Do the percents for 1 and 3 have the same value? Explain. No. Represent different portions.

Unit 4 Lesson 1 – Family Fun



Dear _____,

We read a story called "The Clever Leprechaun" from the book ***The King with Horses Ears*** retold by Batt Burns.

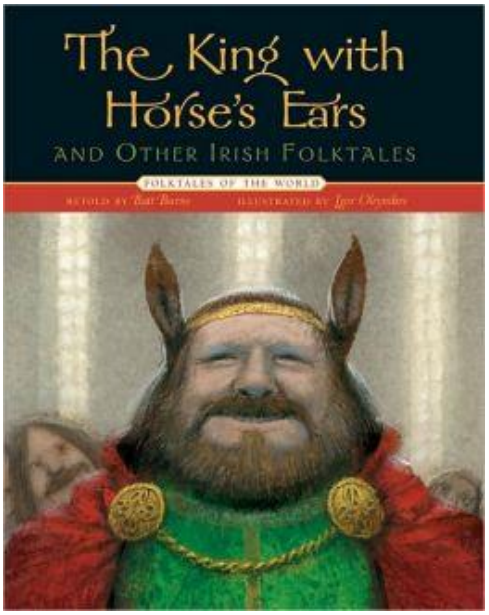
The math concepts we explored in our lesson because of this book were…

_____
_____
_____

Sincerely,

_____

Unit 4 Lesson 1 – Family Fun



Querido _____,

Leímos un cuento que se titula "The Clever Leprechaun" del libro ***The King with Horses Ears*** contado por Batt Burns.

Los conceptos matemáticos que exploramos en nuestra lección relacionados con el libro son…

_____
_____
_____

Sincerely,

_____

Materials
- **BLM** Worth Your Weight in Gold-Measurement Lab Record Sheet
- **BLM** Worth Your Weight in Gold-Measurement Lab Record Sheet Teacher Guide
- **BLM** Solve It! Problem 2
- **BLM** Fraction Action and *X* Marks the Spot
- **BLM** Lessons 1-3 CGI *The Clever Leprechaun*

Math Objectives
- Solve problems using a measurement tool and calculating measurements.
- Model and solve multistep word problems.
- Solve problems involving fractions, ratios and proportions.
- Solve for a variable.
- Compose and decompose numbers.

Language Objectives
- Speak to partners, teacher and class using vocabulary.
- Discuss problem solving process and strategies.

Math Vocabulary
fraction
4 representations of a fraction
decimal
benchmark
equivalent

Literature Vocabulary
apprentice
prosperous
haunt
secluded
wily
hapless
crevice
anguished
writhe
agony

Assessed TEKS for this Unit
5th – 5.3H, 5.3K
6th – 6.4C, 6.4D, 6.4E, 6.5B, 6.5C

Unit 4, Lesson 2 Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post-assessment. They are not optional.

ESSENTIAL

Measurement Lab
- Lesson 1 – *omit*
- **Lesson 2 – Worth Your Weight (6th assessment item 1,3,6)**
- Lesson 3 – The Leprechaun Within You (5th assessment item 1,2,3)

Lesson 2 Materials

The golden nuggets will require prior prep time to ensure paint dries properly. Prepare an assortment large enough that each group can build up to one pound. An approximate weight is acceptable if using real-world objects to represent one oz. and one lb. The purpose of the activity is to give students perspective as to how much "gold" it would take to equal their own body weight. This is not a realistic measurement as gold has a different density than a rock. Please explain that the "Leprechaun Gold is different than regular gold. It is lighter in weight, but heavier in value."
- Leprechaun Golden Nuggets (different sized gravel, pebbles, and rocks spray painted gold)
- balance
- One ounce weights (or objects that weigh the equivalent – slice of bread, AA battery, or a CD)
- One pound weight (or objects that weigh the equivalent – 4 sticks of butter, a shoe, football, or a loaf of bread)

Lesson 2 Student Groups

Students will find the gold equivalent for different weight measurements. Allow students to "play around" with the rocks and weighted objects to fine tune their measurements. They will abstractly convert between pounds and ounces using a ratio table. A Teacher's Guide is provided for the BLM.
- Use the balance to find the gold equivalent to one oz., two oz., five oz., eight oz., etc...
- Use the balance to find the gold equivalent to one pound.
- Answer questions on BLM using a ratio table

Solve It! Multi-step problem solving
- Lesson 1 - triads, 3-step (5th asmnt item 4, 5; 6th asmnt item 8)
- **Lesson 2 - triads, 3-step (5th asmnt item 4, 5; 6th asmnt item 7)**
- Lesson 3 - independent, 3-step (5th asmnt item 4,5; 6th asmnt item 4))

ELPS (*English Language Proficiency Standard*)
2D, 2E, 2H, 3B, 3D, 3H, 4C

CCRS (*College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.1., I.C.2., I.C.3., II.A.4.
ELA II.A.3., II.B.1., III.B.1.,
MATH I.B.1., II.A.1., IV.A.1., VIII.A.3., VIII.A. 4.

Unit 4, Lesson 2 — Grades 5-6

Daily Routine - continued

Fraction Action

- Lesson 1 – *omit*
- **Lesson 2 – (5th assessment item 1,2,3)**
- Lesson 3 – (5th assessment item 6)

***X* Marks the Spot**

- Lesson 1 – *omit*
- **Lesson 2 – (6th assessment item 7)**
- Lesson 3 – (6th assessment item 4)

CGI

- Lesson 1 – Part-Part-Whole (5th assessment item 4)
- **Lesson 2 – Compare Referent Unknown (5th assessment item 5)**
- Lesson 3 – Price Partitive Division (6th assessment item 6)

The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.

<u>OPTIONAL</u>

Target Number

- Lesson 1 – *omit*
- **Lesson 2 – Target Number 15**
- Lesson 3 – Target Number 45

Money Matters

(*If you have a full program and wish to use this optional activity, you will find BLMs and Explanations on MAS Space.)*

Unit 4 Lesson 2 – Daily Routines – Measurement Lab
One per student

Worth Your Weight in Gold – Measurement Lab Record Sheet

Materials:

- Leprechaun Golden Nuggets
- balance
- 1 ounce weight (or objects that weigh the equivalent – slice of bread, AA battery, or a CD)
- 1 pound weight (or objects that weigh the equivalent – 4 sticks of butter, a shoe, football, or a loaf of bread)

Task:

- Use the balance to find the gold equivalent to 1 oz., 2 oz., 5 oz., 8 oz., etc...
- Use the balance to find the gold equivalent to 1 pound. Keep the pile of gold once it weighs 1 pound.
- Answer questions on BLM using a ratio table

1. Cliodhna, the fairy queen of Munster, lived in a golden castle that was said to weigh nearly 80 ounces. How many pounds of gold is equivalent to 80 ounces?

labels	**known**						**unknown**

Now imagine how many 1-pound piles of gold and how many 1-ounce piles of gold it will take to build the castle. Thoughts? Observations?

2. Use the ratio table to convert your weight, or the weight of a group member, from pounds to ounces.

labels	**known**						**unknown**

Now imagine how many 1-pound piles of gold and how many 1-ounce piles of gold it would take to make you worth your weight in gold. Thoughts? Observations?

Unit 4 Lesson 2 – Daily Routines – Measurement Lab
One per student

Lo que vale tu peso en oro - Hoja de registro del laboratorio de medición

Materiales:

- Pepitas de oro de duendes
- balanza
- 1 onza de peso (u objetos que pesen el equivalente – rodaja de pan, pila AA o CD)
- 1 libra de peso (u objetos que pesen el equivalente - 4 barras de mantequilla, un zapato, una pelota o una hogaza de pan)

Tarea:

- Usa la balanza para encontrar el equivalente en oro de 1 onza, 2 onzas, 5 onzas, 8 onzas, etc...
- Usa la balanza para encontrar el equivalente en oro de 1 libra. Mantén la pila de oro una vez que pese 1 libra.
- Responde las preguntas en BLM usando una tabla de relaciones

1. Cliodhna, la reina de las hadas de Munster, vivía en un castillo de oro que, según se decía, pesaba cerca de 80 onzas. ¿Cuántas libras de oro son equivalentes a 80 onzas?

etiquetas	**conocidas**						**desconocidas**

Ahora imagina cuántas pilas de 1 libra de oro y cuántas pilas de 1 onza de oro se necesitarán para construir el castillo. ¿Pensamientos? ¿Observaciones?

2. Usa la tabla de relaciones para convertir tu peso, o el peso de un miembro del grupo, de libras a onzas.

etiquetas	**conocidas**						**desconocidas**

Ahora imagina cuántas pilas de 1 libra de oro y cuántas pilas de 1 onza de oro se necesitarían para hacer valer tu peso en oro. ¿Pensamientos? ¿Observaciones?

Unit 4 Lesson 2 – Daily Routines – Measurement Lab
One per student

Worth Your Weight in Gold –Teacher Guide

Materials:

- Leprechaun Golden Nuggets
- balance
- 1 ounce weight (or objects that weigh the equivalent – slice of bread, AA battery, or a CD)
- 1 pound weight (or objects that weigh the equivalent – 4 sticks of butter, a shoe, football, or a loaf of bread)

Task:

- Use the balance to find the gold equivalent to 1 oz., 2 oz., 5 oz., 8 oz., etc...
- Use the balance to find the gold equivalent to 1 pound. Keep the pile of gold once it weighs 1 pound.
- Answer questions on BLM using a ratio table

3. Cliodhna, the fairy queen of Munster, lived in a golden castle that was said to weigh nearly 80 ounces. How many pounds of gold is equivalent to 80 ounces? tables will vary

labels	**known**	double	double	add 1 more pound 16:1			**unknown**
ounces	**16 oz**	**32 oz**	**64 oz**	**80 oz**			**80 ounces**
pounds	**1 lb**	**2 lbs**	**4 lbs**	**5 lbs**			**5 lbs**

Now imagine how many 1-pound piles of gold and how many 1-ounce piles of gold it will take to build the castle. Thoughts? Observations? Hopefully students gain some perspective as to what 5 lbs. in Leprechaun Gold looks like.

4. Use the ratio table to convert your weight, or the weight of a group member, from pounds to ounces. tables will vary

labels	**known**	x 100	use info from #1	add ratios			**unknown**
pounds	**1 lb**	**100 lbs**	**5 lbs**	**105 lbs**			**105 lbs**
ounces	**16 oz**	**1600 oz**	**80 oz**	**1680 oz**			**1680 oz**

Now imagine how many 1-pound piles of gold and how many 1-ounce piles of gold it would take to make you worth your weight in gold. Thoughts? Observations? Hopefully students gain some perspective as to how much Leprechaun Gold it would take to equal their weight.

Unit 4 Lesson 2 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

$$\frac{5}{6} + \frac{2}{5} = ???$$

X Marks the Spot

Solve for *x*. **Hint – Find 10% first, and then think about half-ing until you reach 2.5%.*

$331.00 bank deposit + 12.5% interest earned over 1 year = $ *x*

Unit 4 Lesson 2 – Daily Routines – Solve It! (triads) **5-6**
per partner pair

Problem 4:
Jeanene found 3 fraudulent purchases on her credit card statement. The purchases were for gas at $43.27, dinner at a restaurant for $21.88, and items at a department store for $34.85. Not only will the credit card company refund the stolen money, they will also refund the 17.5% interest that accrued. How much money will be refunded to Jeanene?

Step 1 – Name:	Verification – Name:
Step 2 – Name:	Verification – Name:
Step 3 – Name:	Verification – Name:
Final Solution – Name:	Verification – Name:

Unit 4 Lesson 2 – Daily Routines – Solve It! (triads) **5-6**
per partner pair

Problem 4:
Jeanene encontró 3 compras fraudulentas en el resumen de su tarjeta de crédito. El ladrón de la tarjeta de crédito compró combustible por $63.27 y comió en un restaurant por $43.09. La compañía de la tarjeta de crédito no solo reembolsará el dinero robado, sino que también reembolsará el interés acumulado de 17.5%. ¿Cuanto dinero se le reembolsará a Jeanene?
Puedes redondear al centavo más cercano durante la realización de los cálculos.

Paso 1 – Nombre:	Verificación – Nombre:
Paso 2 – Nombre:	Verificación – Nombre:
Paso 3 – Nombre:	Verificación – Nombre:
Solución Final – Name:	Verificacioón – Nombre:

Materials
- **BLM** Fraction and Decimal Cards-B (2 pages)
- **BLM** Fraction and Decimal Cards-B Teacher Guide
- blue painter's tape or masking tape
- **BLM** folktale elements/plot chart

Literature Selection
The King with Horse's Ears
retold by Batt Burns
selection ***A Clever Leprechaun***
p.77

Math Vocabulary
fraction
4 representations of a fraction
decimal
benchmark
equivalent

Literature Vocabulary
apprentice
prosperous
haunt
secluded
wily
hapless
crevice
anguished
writhe
agony

ELPS (*English Language Proficiency Standard*)
1C, 2D, 2F, 3B, 3D, 4G, 4J, 4K

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.A.2., I.F.1., II.A.2., II.A.3., II.A.4.
ELA II.A.1., II.A.3., II.A.4., II.A.5., II.A.10., II.C.2.

Unit 4, Lesson 2 Grades 5-6

Classroom Lesson

Every day teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

Math Objectives:
- Use models to relate decimals to fractions.
- Generate equivalent forms of rational numbers including whole numbers, fractions, and decimals.
- Compare and order non-negative rational numbers.

Language Objectives:
- use the context of the sentence to determine the meaning of unfamiliar words or multiple meaning words
- summarize and explain the lesson or message of a work of fiction as its theme
- listen attentively to speakers, ask relevant questions, and make pertinent comments
- write literary texts to express their ideas and feelings about real or imagined people, events, and ideas

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BEFORE READING
Building Background – Vocabulary & Literature
Display the literature vocabulary in groups of two according to two parts of speech. (adjective and noun) Write 'writhe' outside the groups.

secluded wily hapless prosperous anguished	haunt crevice agony apprentice

writhe

SAY: Read the literature vocabulary with me.
Guide the students in echoing or simultaneously reading the vocabulary words with you.

ASK: Why is writhe not in a group?
Allow students to respond.
If students are having difficulty-
SAY: Lets discover what is the same about the words in the groups and maybe that will give us an idea as to why writhe is not

Classroom Lesson - continued

included.
Reread the words in the first box.
ASK: Which of these five words means skilled at gaining an advantage?
Allow for students to respond.
ASK: Is this something that you could do? Can you wily?
Allow students to respond.
SAY: No, that would make sense. I could describe someone as wily. That would mean they are skilled at gaining an advantage over another person. Another way to describe them is that they are good at trickery.
ASK: What part of speech would wily be if it were used to describe someone or something?
Guide the students in determining that wily is an adjective.

ASK: I wonder if the other words in this first box are adjectives.

ASK: Which word in the first box comes from the Latin root meaning to have done well? Latin – prosperus
Write the Latin origin on the board. Allow students to respond.
ASK: Could a person be described as prosperous?
Guide the students in discovering prosperous is also an adjective.
SAY: Just to be on the safe side, let's make sure another word in the first box is an adjective.

ASK: Which word in the first box has two syllables and is a synonym of unlucky or unfortunate?
Allow students to respond.
Give an additional hint if needed that the ending of the word means 'without'

ASK: could you or another be described as hapless? Described as being unlucky?
Guide the students in determining that hapless is an adjective.

SAY: So, now we know that the words in the first box are adjectives. That means the second box must be another part of speech. I wonder if it is the category that writhe belongs to. Let's determine the part of speech that the word writhe would fall into.

Write the following sentence on the board and read the sentence:
The man will writhe in pain if he falls from that height!

ASK: What is it that the man will do if he falls from that height?

Unit 4, Lesson 2 **Grades 5-6**

Classroom Lesson - continued

Allow students to respond.
SAY: If it is something 'he can do', then writhe is an action word.
ASK: what do we name actions words or words that show action?
Guide students in naming words as verbs.
SAY: Now that we know writhe is a verb, let's determine if the final box contains verbs.

ASK: Which word in the second box names a crack in a wall or large rock?
Give another clue if needed: Latin- crepare
SAY: so this word names a thing…a crack in a wall or rock.
ASK: What part of speech is crevice?
Guide students in determining these words are nouns.

ASK: Where should we place writhe?
Possible suggestion- category of its own for verbs.
SAY: in order to create a complete sentence you need one noun and one verb. Here are a couple of examples:

Cats sit.
Dogs drink.
I think.
Ashley (or student's name) leaves.

SAY: Granted- these sentences are not interesting, but they are complete. With a partner you will create a short complete sentence using only the vocabulary words. You may change their tense and add a noun marker such as: A, An, The

Allow partners time to make a sentence. Then to share.
Example: *The persistent apprentice writhes.*

SAY: In lesson 1, we learned folktales begin in most cultures as stories told orally. The stories are passed down through the generations and may change slightly.

ASK: What else did we learn about folktales?
Write students thoughts in word or short phrases on a chart or on the board.

SAY: Here is a chart (distribute BLM) that lists some of the elements included in a folktale. As we read the folktale today, listen for the elements listed. If you feel that one of these elements is included in the folktale check it off in the box next to the element.

	Unit 4, Lesson 2 **Grades 5-6** **Classroom Lesson - continued**  Direct the student to fold their paper so that only the top chart is viewable. The bottom will be completed after reading. Read through the elements and discuss briefly the meaning of each. SAY: Today we'll be reading a folktale about a leprechaun. ASK: What do you know about leprechauns? Direct students to look at the picture of the leprechaun on the BLM. List the prior knowledge students present about leprechauns somewhere in the classroom. As students respond, facilitate characteristics of leprechauns' character, where they can be found, and what is their importance in Irish storytelling. READ aloud the introduction paragraph (italicized) to A Clever Leprechaun pg. 77. Discuss briefly the characteristics of leprechauns that were different than the ones listed. SAY: Let's read and find out what the leprechaun does that is so clever in this folktale. **DURING READING** **Comprehensible Input - Vocabulary& Literature** Begin with reading aloud to students modeling your reading processes one at a time in a think-aloud. Acknowledge literature vocabulary words as you come across them in reading. Stop to clarify unfamiliar words, use context clues to figure them out. **Teacher reads p. 77 modeling thought process.** Stop. Direct students to check off any elements they might have heard. ASK: Who do you think the main characters are so far? What makes you think that? Allow students to respond. SAY: Remember in lesson 1 we discussed that many countries and cultures have stories (tales) that are retold by folk generation after generation orally. Some of the stories are told to explain why something is as it is or how something in nature came to be. ASK: Which do you think this tale is geared to- is this story explaining why something is as it is or how something in nature came to be? Allow students to think, share with their partner and then share with the class. Have students further explain the whys to their
Main Characters: **Brohgawn** **Fisherman** **Story Problem:** **Brohgawn was caught by the fisherman. The fisherman will not release him until Brohgawn gives him his gold.** **Solution: Brohgawn tricks the fisherman into stepping on a slippery boulder and tapping it with his knife.**	

thinking.

Popcorn Students to continue reading starting on page 78. Stop after reading "…did not hand over his pot of gold." Page 79.

Direct students to think about the folktale elements then, share with their neighbor or partner which elements they read.
Encourage them to provide proof of the elements from the story.
ASK: Why did Brohgawn refuse to take on an apprentice?
Turn to your neighbor and share.
ASK: Why was it becoming dangerous for Brohgawn to work outdoors?
Share with your partner.
Why was Brohgawn described as prosperous?
Allow students to share.

Popcorn Students to continue reading starting on page 79. Stop after reading "…You are wasting my day!" bottom of page 79.

Direct students to think about the folktale elements then, share with their neighbor or partner which elements they read.
Encourage them to provide proof of the elements from the story.
ASK: What other main characters are now included in the story?
Allow students to respond.

ASK: What is the problem presented in the story? Why do you think this is the problem?
Allow students to think and share with a partner, then share aloud with class.

ASK: What do you predict will happen next?
Allow students to share.

Popcorn Students to continue reading starting on page 80. Stop after reading "…Come, let's go."

ASK: Why did the fisherman call Brohgawn persistent?
Allow the students to respond. Why do you think Brohgawn was being persistent?
Think, share with your neighbor and then share with class.

ASK: What do you predict will happen next? Why do you think this?
Allow students to share.

Teacher Note
The math objectives covered in the Transition to Math Lesson are not assessed items, but do lay the foundation for understanding the concepts taught in the TV Lesson. This activity is necessary and relevant.

Figure 1

Teacher Note
Make sure students are aware that it is appropriate to approximate the decimals for thirds as 0.33 and 0.66 for this activity and all of the activities during the summer program. (This also includes their percent equivalents. 33% and 66%) It is important they understand those are actually repeating decimals that can affect solutions to some problems if not handled correctly within the

context.	**Unit 4, Lesson 2** **Grades 5-6** **Classroom Lesson - continued** **Popcorn Students to continue reading starting on page 80 at "When they finally reached the spot…" Stop after reading "…one tap of my knife handle."** ASK: The author said the fisherman was yelling and threatening the leprechaun. Why was the fisherman so upset? Think, share with your neighbor, then share with the class. ASK: What would you do if you were the fisherman? Allow students to respond. ASK: What would you do if you were the leprechaun? Allow students to respond. SAY: Let's see if your choices are what happen for either of these two characters. **Popcorn Students to continue reading starting on page 80 "No! snapped the fisherman…" Stop after reading "…with green moss." At the bottom of page 80.** Direct students to think about the folktale elements then, share with their neighbor or partner which elements they read. Encourage them to provide proof of the elements from the story. ASK: Do you think the problem you identified in the story earlier is the same problem? Why or why not? Allow students to share and/or identify the problem. Students are grouped for partner reading. Prior to reading aloud with partner, direct **students to silently read page 81**, stopping at the bottom of the page. Then, students will **reread page 81 aloud** with their partner. Direct students to check over and provide proof of the elements of a folktale included on this page. ASK: How was the problem in this story solved? Think, share with your partner, share with the class. ASK: What do you think Brohgawn meant when he said to himself- "Such an adventure is not good for the heart."? Think, share with your partner, share with the class. SAY: Think of a question to ask your partner about what you've read in this story. Ask your partner the question- a great question might begin with 'who, what, when, where, why, how'. Then discuss with your partner whether this story explained why something is the way it is, explained a wonder of the world, or just was a story for entertainment. Students should be encouraged to

give their whys for their response.

AFTER READING
Practice and Application – Vocabulary & Literature
Number the students off 1-3 or1-4 depending on the total number of students in your classroom. The students will share their thoughts on the elements in this folktale and why they checked off certain elements through numbered heads together. All the 1s get to one group. All the 2s, and so forth.

Afterwards allow the groups to work together to complete the Plot Chart below the elements checklist. Share Plot Charts with class.

ELPS (*English Language Proficiency Standard*)
1E, 2E, 2G, 3B, 3D, 3F, 4F, 4H

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.C.1., I.C.2., II.A.2., II.D.1.
MATH I.B.1., VI.B.1., IV.B.1., IV.B.2., VI. B.4.,

Classroom Lesson - continued

Transition to Math

Same activity as the Transition to Math from Lesson 1 but with different benchmark fractions. Students already used equivalent decimals, fractions, and ratios with benchmarks in previous unit lessons with a strip diagram. This skill was embedded within the number sense strategies practiced in different activities and problems. This activity will allow students the opportunity to visualize the many different equivalencies between the four representations of a fraction and decimals on a number line. They will complete the same number line activity during the Transition to Math time in Lesson 3, but with different benchmarks and whole numbers.

Activity Focus:

- benchmark fractions of **one-third**
- equivalencies between the four representations of a fraction and decimals

Activity Directions:

- Initial Prep - Using blue painters tape, create a horizontal number line on the wall big enough to hold all of the Fraction and Decimal Cards. Only provide tick marks where **3, 4, and 5** will be placed. However, do not label the whole numbers. Shown in Figure 1.
- Initial Prep – Cut out Fraction and Decimal Cards. Divide into equal groups based on number of student groups.
- Divide students into groups of three or four.
- Provide them with a set of random Fraction and Decimal Cards.
- Allow students to work within their own groups, between groups, and as a whole class to correctly place the cards on the number line.
- Hold a whole class discussion and analyze the card placements. Focus on the equivalencies.

Questions to ask:

- How did you know that card should be placed in that particular spot?
- Did you have to adjust any of the cards? Why?
- Is this an area model or set model? How do you know?
- When do you see these benchmarks in real life?

Students may finish this activity during the Follow-up Lesson if needed.

Objectives

Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 4 Lesson 2 – Classroom Lesson **Folktale Elements/Plot Chart**
One per student

element	***The Clever Leprechaun***	***Just One Choice***
lesson learned		
wonder of the world explained		
supernatural or magical element		
main character represent a human quality of good or bad		
main character changes from beginning to end of tale		
plot contains problem and solution		

"The Clever Leprechaun"

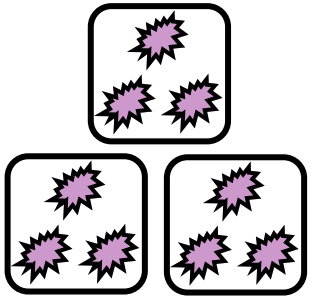
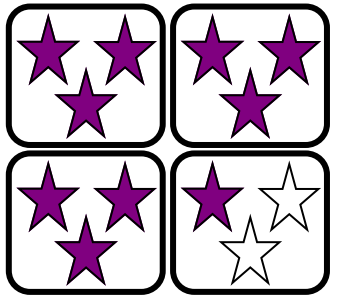
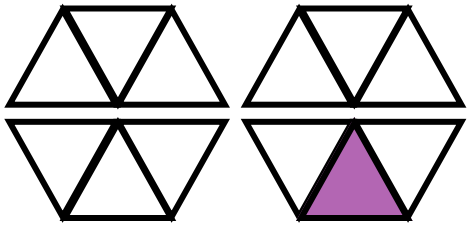
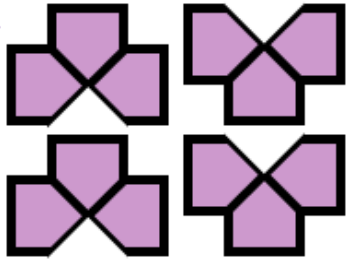
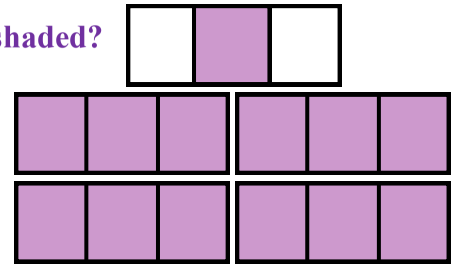
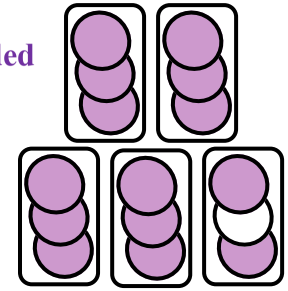
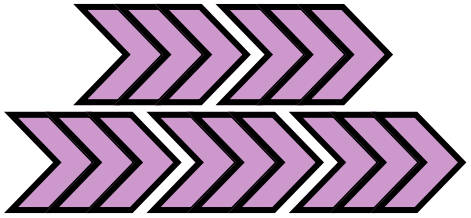
When?	Where?
Why question posed/Wonder of world to be explained:	
Main Characters/Animals:	
Personification examples:	
Problem:	
Solution:	
Answer to why question/Wonder of world explained:	

Unit 4 Lesson 2 – Transition to Math
One set per class

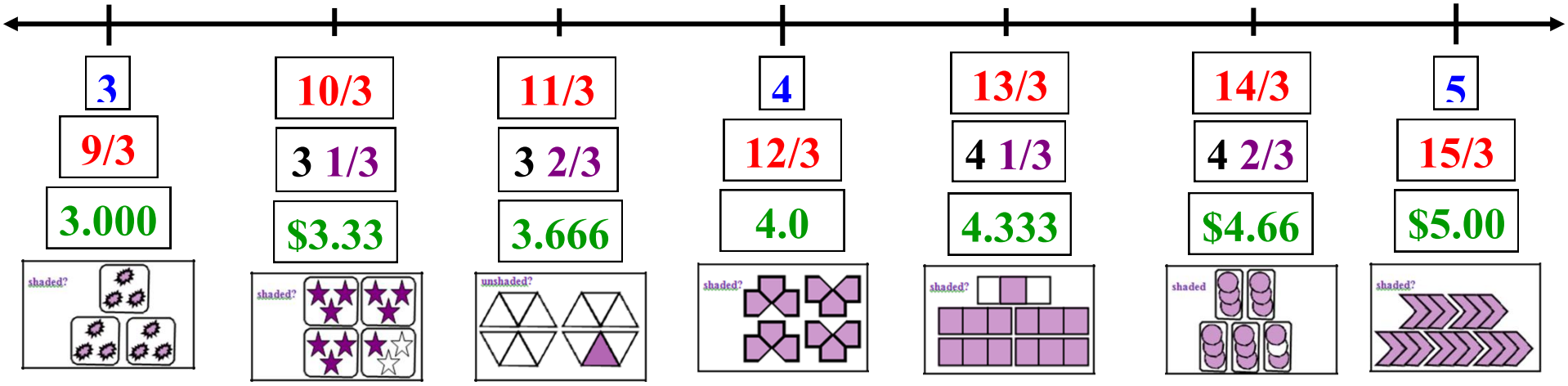
Fraction and Decimal Cards - B (1/2)

3	4	5	$\frac{9}{3}$
$\frac{10}{3}$	$\frac{11}{3}$	$\frac{12}{3}$	$\frac{13}{3}$
$\frac{14}{3}$	$\frac{15}{3}$	$3\frac{1}{3}$	$3\frac{2}{3}$
$4\frac{1}{3}$	$4\frac{2}{3}$	3.000	$3.33

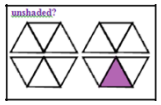
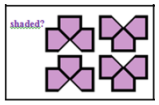
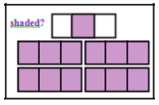
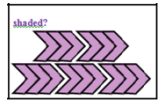
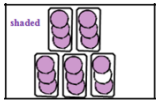
Fraction and Decimal Cards - B (2/2)

3.666	4.0	4.333	$4.66
$5.00	shaded? 	shaded? 	unshaded? 
shaded? 	shaded? 	shaded 	shaded? 

Fraction and Decimal Cards - B Teacher Guide



Clarification for Pictorial Models

$\frac{9}{3}$ Set Model 	$\frac{10}{3}$ or $3\frac{1}{3}$ Area Model 	$\frac{11}{3}$ or $3\frac{2}{3}$ Area Model 
$\frac{12}{3}$ Area Model 	$\frac{13}{3}$ or $4\frac{1}{3}$ Area Model 	$\frac{14}{3}$ or $4\frac{2}{3}$ Set Model 
$\frac{15}{3}$ Set Model 		

Materials
- **BLM** Equivalency Chart from Lesson 1 (Lesson 2 only)
- **BLM** The Clever Thirds

Math Vocabulary
fraction
4 representations of a fraction
decimal
benchmark
equivalent

Literature Vocabulary
apprentice
prosperous
haunt
secluded
wily
hapless
crevice
anguished
writhe
agony

ELPS (*English Language Proficiency Standard*)
1E, 1F, 2G, 3D, 3F, 3H, 4F, 5B, 5C

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.1., I.C.2., I.E.1., II.B.2.
ELA I.A.2., II.A.2., II.A.3., III.B.2., IV.A.3.
MATH I.B.1., I.C.1., II.B.1., II.C.1., IV.B.1., VIII.A.1., VIII.A.3., VIII.A.4.

Unit 4, Lesson 2 — Grades 5-6

TV Lesson

Math Objectives:
- Add and subtract positive rational numbers fluently.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Building Background
Students officially solved mixed rational number problems in Lesson 1 of this unit.

They will use the knowledge of benchmark fractions, decimals, and equivalencies gained in the Transition to Math number line activity during the TV Lesson.

Comprehensible Input
Students will solve problem situations that involve adding and subtracting positive rational numbers. However, the word problems use specific fractions *(thirds)* and decimals to allow students extra practice with benchmarks and equivalencies. Students are encouraged to continue to practice mental math strategies to find solutions.

The problems on the BLM can be solved by either changing all quantities to decimals or fractions. Both solution strategies are covered in this lesson. Students should first fill in the Equivalency Chart to make relationships between the unit of measure to the fractions and decimals. Complete Lesson 2 Chart only.

Problem #1 – Decimals to Fractions
"What do we know about this problem? What information is important?" *(has $\frac{7}{3}$ yds. of leather, gets 6.33 yds. more, then uses 1 $\frac{1}{3}$ yds.)*

"How do you think we should solve this problem?" *(answers will vary)*

Students will follow along with the TV teacher and change the decimals to fractions for this particular problem.

Follow the same process as Lesson 1, making sure to relate the decimals and fractions to the unit of measure.

New equation: $\frac{7}{3} + 6\frac{1}{3} - 1\frac{1}{3} = ?$

Point out that the new equation has a combination of improper and mixed fractions. If a student truly understands fractions, computation shouldn't be too difficult. Otherwise, convert all fractions to either improper or mixed, and then solve.

The intent at this point is to have students think of the fractions in terms of the unit of measure. Mental math strategies should be sufficient, especially with the help of the Equivalency Chart. Do NOT make students walk through a step-by-step algorithm. It is more important that they understand the meaning of the fractions rather than focus on a calculation process.

Changing to Mixed Fractions:

New equation: $2\frac{1}{3} + 6\frac{1}{3} - 1\frac{1}{3} = ?$

Combined leather $= 8\frac{2}{3}$ yds.

Help students "chunk" the fractions into whole numbers and thirds in order to perform the subtraction. They can deal with partials however they prefer. This example focuses on the whole first.

"If I have 8 whole yards of fabric, can I go ahead and subtract the one yard he needs for the shoes?" *(Yes. Now he has* $7\frac{2}{3}$ *yds.)*

"What should we do now?" *(Subtract the remaining* $\frac{1}{3}$ *yd. Brohgawn will have* $7\frac{1}{3}$ *yds. of leather left.)*

Changing to Improper Fractions:
This is not the most efficient way to solve this particular problem since two of the fractions were already placed in mixed form. But practice is needed in case improper fractions are a better choice in a problem situation.

We know 6.33 yds. will easily convert to $6\frac{1}{3}$. Changing mixed to improper should be performed by thinking in terms of "pieces of the whole," NOT by a shortcut such as

(6 wholes x 3 denominator) + 1 numerator = 19 new numerator "then write it over the original denominator."

Instead, ask students what the denominator of three tells us about the six wholes. *(Each whole is broken into three pieces, therefore we have 18 pieces, or 18-thirds that represent six wholes.)*

"If six wholes is equivalent to 18-thirds, what else do we need to do?" *(Combine 18-thirds with the one-third that remains in the original fraction. Altogether, there are 19-thirds.)*

"What does that mean in regards to the mixed fraction we started with?" *($\frac{19}{3}$ is equivalent to $6\frac{1}{3}$)*

"Use the same process to change $1\frac{1}{3}$ yds. to an improper fraction. What should we do?" *(One-whole is the same as three-thirds. Combine it with one-third to get four-thirds.)*

"What does that mean in regards to the mixed fraction we started with?" *($\frac{4}{3}$ is equivalent to $1\frac{1}{3}$)*

New equation: $\frac{7}{3} + \frac{19}{3} - \frac{4}{3} = ?$

Combined leather $= \frac{26}{3}$ yds.

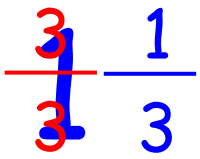
Subtract leather he cut off for shoes $\frac{26}{3} - \frac{4}{3} = \frac{22}{3}$ yds.

Now students have to convert the improper back to a mixed number to better understand the unit of measure. This requires division.

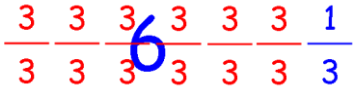
"How many three-thirds can we get out of 22-thirds?" *(Seven-wholes is equivalent to $\frac{21}{3}$ which leaves $\frac{1}{3}$ left over. That means Brohgawn has $7\frac{1}{3}$ yds. of leather left over.)*

It is clear the number of steps to go through with this strategy is significantly more than leaving the fractions in mixed form. We want students to eventually be able to determine when one strategy is more efficient than the other.

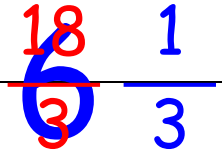
Teacher Note
It is helpful to write the whole number equivalent over the top of the whole digit on the board as shown below.



Then students are able to view the mixed fraction as 3-thirds combined with 1-third. Use the same process for 6 wholes as shown below.



It is not intended for students to write multiple whole number equivalents as seen in the example, however it is necessary until they connect that six groups of 3-thirds is the same as 18-thirds. Shown below.



Problem #2 – Fractions to Decimals

Follow the same process except change the fraction to a decimal.

New equation: 5.33 - 3.66 = ? *(1.67)*

"What does that mean? How did we end up with 67-hundredths?" Hold a class discussion about the decimal outcome. *(0.67 is a more accurate decimal approximation for two-thirds because the repeating 0.66666 would round up to 0.67.)*

"How do we convert 1.67 dozen? *(One dozen = 12 clovers, 0.67 ≈ two-thirds of a dozen. Two-thirds of a dozen = 8. She had 20 clovers left.)*

Students will fill in the rest of the chart for both problems. They may use time during the Follow-up Lesson if needed.

Pirate's Corner

Can you think of another example of when a "quarter" has a different value? If so, go to MAS Space and tell Captain Portio and the TV Teacher!

Objectives

Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 4 Lesson 2 – TV Lesson

The Clever Thirds

Work with your teacher and in groups to solve the problems.

1. Brohgawn had $\frac{7}{3}$ yds. of soft brown leather laid out on his work station. After combining it with the new bolt that measured 6.33 yds., he decided to use his magical knife and start a new pair of shoes. He needed to cut exactly $1\frac{1}{3}$ yds. How much leather did he have left?

Fraction	Decimal

2. In Lissaree, a peaceful dewy meadow, was the home to $5\frac{1}{3}$ dozen luscious green 4-leaf clovers. The fairy princess had the honor of bestowing an old magic called "luck" onto their delicate petals. She finished about 3.66 dozen before she grew sleepy and needed a nap. How many clovers does the princess still need to sprinkle magic on? **not in dozens*

Fraction	Decimal

3. Do the one-thirds in problem 1 and 2 have the same value? Explain.

Unit 4 Lesson 2 – TV Lesson

The Clever Thirds

Colabora con tu maestro y en grupos para resolver los problemas.

1. Brohgawn tenía $\frac{7}{3}$ yardas de cuero suave marrón dispuesto en su estación de trabajo. Luego de combinarlo con el nuevo rollo de tela que medía 6.33 yardas, decidió usar su cuchillo mágico y comenzar un nuevo par de zapatos. Necesitaba cortar exactamente $1\frac{1}{3}$ yardas. ¿Cuánto cuero le quedó?

Fracción	Decimal

2. Lissaree, una tranquila pradera cubierta de rocío, era el hogar de $5\frac{1}{3}$ docenas de atractivos tréboles verdes de 4 hojas. La princesa de las hadas tenía el honor de conceder una magia antigua llamada "suerte" a sus delicados pétalos. Terminó alrededor de 3.66 docenas antes de que le diera sueño y necesitara tomar una siesta. ¿Sobre cuántos tréboles la princesa aún necesita esparcir su magia? **no en docenas*

Fracción	Decimal

3. . ¿Los tercios en el problema 1 y en el 2 tienen el mismo valor? Explica tu respuesta.

Materials
- **BLM** Fraction-Decimal Memory Game Directions
- Fraction-Decimal Memory Cards B (3 pages)
- **BLM** Recursive Review Lessons 1-3

Math Vocabulary
fraction
4 representations of a fraction
decimal
benchmark
equivalent

Literature Vocabulary
apprentice
prosperous
haunt
secluded
wily
hapless
crevice
anguished
writhe
agony

ELPS (*English Language Proficiency Standard*)
1F, 2E, 2F, 2H, 3C, 3F, 4F, 4J, 5B
CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.C.1., I.C.2., II.B.1., II.B.2.
ELA I.A.1., I.A.2., II.A.2., III.B.1., III.B.2., IV.A.3.
MATH I.B.1., I.C.1., II.B.1., IV.B.1., VIII.A.1., VIII.A.3.

Teacher Note
The math objectives covered in the Follow-up Lesson are not assessed items, but do support and reinforce the concepts taught in the TV Lesson. This activity is necessary and relevant.

Teacher Note
Fraction-Decimal Cards B (1/2) are all equivalent to $\frac{1}{3}$.
Fraction-Decimal Cards B (2/2 are all equivalent to $\frac{2}{3}$.

Unit 4, Lesson 2 — Grades 5-6

Follow-up

Math Objectives:
- Use models to relate decimals to fractions.
- Generate equivalent forms of rational numbers including whole numbers, fractions and decimals.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

If students did not finish the questions during the TV Lesson they may do so during this time.

Practice and Application
Students will play the game Fractions and Decimal Memory B. It is played in the same way as the classic game. Modifications are provided on BLM Fraction-Decimal Memory Game B Directions.

QUESTIONS
- How do you know those cards are equivalent?
- Are there any cards that seem more difficult than the others? Why?
- Justify the relationship you used for this set…

Recursive Review
Please use **BLM** *to answer the Recursive Review questions.*

- Which of the following is NOT a true statement?

A. $\frac{3}{5} + \frac{2}{10} = \frac{4}{5}$

B. $\frac{6}{7} - \frac{1}{3} = \frac{11}{21}$

C. $\frac{9}{12} - \frac{1}{4} = \frac{6}{12}$

D. $\frac{6}{8} + \frac{1}{2} = \frac{7}{10}$

Writing Topics
Independent Writing Topic
Students will have a daily writing activity which will incorporate the day's focus math vocabulary.

- **Dozens, hours, and yards are easily compatible with thirds? Why?**

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 4 Lesson 2 - Follow-up
One per partner pair

Fraction-Decimal Memory Game B Directions

Materials:

- Full set of Fraction Decimal Cards B (40)
- Fraction-Decimal Memory Record Sheet

Procedure:
The object of the game is to correctly match as many equivalent fraction/decimal pairs as possible. Some cards are real world examples that can be represented with a fraction or decimal.

- Shuffle cards and arrange them face down in a 5x8 array.
- Player 1 flips over two cards.
    - Match – Player keeps pair and justifies the relationship on the BLM. Turn ends.
    - Mismatch – Player flips cards back to original position and justifies the non-relationship on the BLM. Turn ends.
- Player 2 repeats process.
- Player with the largest number of matched pairs by the end of class is the winner!

*Just like with any game, partner pairs may work together instead of as opponents. Understanding the relationships between the cards is the main focus. Having the highest number of matched pairs is NOT.

*Two of the Fraction-Decimal Cards reference "one full deck of cards." Please inform students that "a full deck" is 54 cards for this activity. 52 suited cards and two jokers.

Modifications:

- Laminate the cards so they can write the fraction or decimal equivalent directly on them. This will prevent students from having to "figure it out" each time the card is flipped over. Students may also use their Equivalency Chart from the TV Lesson.
  **Only do this with groups that are struggling with the concept. It is important that the rest of the class practice the equivalencies each time.*

- Match three cards at one time by finding a common relationship. Students must justify the relationship between all three cards on the BLM. Make sure to stop by this group often and have them explain their thinking. If you notice this group continues to make simple connections such as "all three cards have one-third," nudge them to make bigger leaps. Technically, all cards are related since they all stem from one-third. Let them discover that, though.

Unidad 4 Lección 2 – Seguimiento

Uno por pareja de compañeros

Instrucciones del juego de la memoria B de Fracción Decimal

Materiales:

- Juego completo de Cartas B (40) de Fracción Decimal
- Hoja de registro de la memoria de Fracción Decimal

Procedimiento:

El objetivo del juego es unir correctamente la mayor cantidad posible de pares de fracciones/decimales equivalentes. Algunas cartas son ejemplos del mundo real que se pueden representar con una fracción o un decimal.

- Mezcla las cartas y acomódalas con la cara hacia abajo en un orden de 5 x 8.
- El jugador 1 da vuelta dos cartas.
    - Coincidencia - el jugador mantiene pares y justifica la relación en BLM. El turno termina.
    - No coincidencia - el jugador vuelve a dar vuelta las cartas hacia la posición original y justifica la inexistencia de relación en BLM. El turno termina.
- El jugador 2 repite el proceso.
- ¡El jugador con el mayor número de pares de coincidencias al final de la clase es el ganador!

*Al igual que en cualquier juego, los pares de compañeros pueden trabajar juntos en lugar de trabajar como oponentes. El enfoque principal es comprender las relaciones entre las cartas. NO lo es tener el mayor número de pares de coincidencias.

*Dos de las cartas de Fracción Decimal hacen referencia a "un mazo de cartas completo". Infórmele a los estudiantes que "un mazo completo" consiste en 54 cartas para esta actividad. 52 cartas y dos comodines.

Modificaciones:

- Lamine las cartas para que puedan escribir la fracción o el decimal equivalente directamente sobre ellas. Esto evitará que los estudiantes tengan que "descubrirlos" cada vez que se de vuelta la carta. Los estudiantes también pueden utilizar el Cuadro de equivalencias de la Lección TV.
  **Solo haga esto con aquellos grupos que tengan problemas con el concepto. Es importante que el resto de la clase practique las equivalencias cada vez.*

- Haga coincidir tres cartas a la vez encontrando una relación común. Los estudiantes deben justificar la relación entre las tres cartas en BLM. Asegúrese de hacer que este grupo se detenga a menudo y explique su razonamiento. Si usted nota que este grupo continúa haciendo conexiones simples, tales como "las tres cartas tienen un tercio", anímelos a dar saltos más grandes. Técnicamente, todas las cartas están relacionadas dado que todas parten de un tercio. Sin embargo, permítales descubrir esto a ellos.

Unit 4 Lessons 2 – Follow-up
One per partner pair

Fraction-Decimal Memory Cards B (1/2) **All cards on this page are equivalent to one-third*

1 foot out of a yard	**2 feet out of 2 yards**	**3 feet out of 9 yards**	**cracked 4 eggs in a dozen**	**sang 5 mins out of 15**
painted 6 out of 18	**missed 7 out of 21 shots**	**used 8 eggs in 2 dozen**	**caught 9 fish out of 27 bites**	**10 mins out of a half hour**
11 dogs with fleas out of 33	**paint 12 eggs out of 3 dozen**	**paid $1.30 out of $3.90**	**caught 14 out of 42 fireflies**	**studied 15 out of 45 mins**
boiled 16 eggs out of 4 dozen	**spent $0.17 out of $0.51**	**18 cards bent out of a full deck**	**saved $19.00 out of $57.00**	**20 mins of an hour**

Unit 4 Lessons 2 – Follow-up
One per partner pair

Fraction-Decimal Memory Cards B (1/2) **All cards on this page are equivalent to one-third*

1 pies de una yarda	2 pies de 2 yardas	3 pies de 9 yardas	rompió 4 huevos en una docena	cantó 5 mins de 15
pintó 6 de 18	faltó 7 de 21 tiros	usó 8 huevos en 2 docenas	pescó 9 peces de 27 picaduras	10 mins de media hora
11 perros con pulgas de 33	pintó 12 huevos de 3 docenas	pagó $1.30 de $3.90	atrapó 14 de 42 luciérnagas	estudió 15 de 45 mins
hirvió 16 huevos de 4 docenas	gastó $0.17 de $0.51	18 tarjetas marcadas de la baraja entera	Ahorró $19.00 de $57.00	20 mins de una hora

Unit 4 Lessons 2 – Follow-up
One per partner pair

Fraction-Decimal Memory Cards B (2/2) **All cards on this page are equivalent to two-thirds*

2 pies de una yarda	**4 pies de 2 yardas**	**6 pies de 9 yardas**	**rompió 8 huevos en una docena**	**cantó 10 mins de15**
pintó una docena de 18	**faltó 14 de 21 tiros**	**usó 16 huevos en 2 docenas**	**pescó 18 peces de 27picaduras**	**20 mins de media hora**
22 perros con collares de 33	**pintó 24 huevos de 3 docenas**	**pagó $2.00 de $3.90**	**atrapó 28 de 42 luciérnagas**	**estudió 30 de 45 mins**
hirvió 32 huevos de 4 docenas	**gastó $0.34 de $0.51**	**36 tarjetas marcadas de una baraja entera**	**ahorró $38.00 de $57.00**	**40 mins de una hora**

Fraction-Decimal Memory Cards B (2/2) **All cards on this page are equivalent to two-thirds*

2 feet out of a yard	4 feet out of 2 yards	6 feet out of 9 yards	cracked 8 eggs in a dozen	sang 10 mins out of 15
painted a dozen out of 18	missed 14 out of 21 shots	used 16 eggs in 2 dozen	caught 18 fish out of 27 bites	20 mins out of a half hour
22 dogs with collars out of 33	paint 24 eggs out of 3 dozen	paid $2.60 out of $3.90	caught 28 out of 42 fireflies	studied 30 out of 45 mins
boiled 32 eggs out of 4 dozen	spent $0.34 out of $0.51	36 cards bent out of a full deck	saved $38.00 out of $57.00	40 mins of an hour

Materials
- balance (no weights necessary)
- 2 100-calorie snack packs (heaviest weight possible)
- 2 paper dessert plates
- 2 paper towels

All items listed above per partner pair
- **BLM** 100-Calorie Snack Packs-Snack Fractions
- **BLM** 100-Calorie Snack Packs-Snack Fractions Teacher Guide

Math Vocabulary
fraction
4 representations of a fraction
decimal
benchmark
equivalent

Literature Vocabulary
[add here]

Teacher Note
Each pair of students MUST have the same 100-calorie snack weight. In other words, if partner A has a snack that weighs 1.03oz., partner B must have a snack that weighs 1.03oz.

It is okay for a group to have a different snack or weight than another group.

Unit 4, Lesson 2 — Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios and percents.
- Convert between fractions, decimals and percents.
- Estimate to find solutions to problems involving fractions, decimals and percents.

Language Objectives
- Discuss how fractions, decimals, ratios and percents can be used to solve real-world problems.

Snack Fractions
The Snack Fraction activity in this unit is different than any other students have completed up to this point. The 100-calorie snack packs are packaged according to weight as opposed to quantity. The lesson will continue to focus on combining and separating fractional parts as well as dividing into fourths, but based on the weight of the snack, not the quantity of the snack in the package. It will be easier for students to find weight measurements with the heaviest snack pack you can find. A Teacher Guide for the BLM is provided.

Be explicit that this is a SET model where the whole is defined as TWO snack packs, not one. Same concept as the Beef Jerky activity.

QUESTIONS
- What is the whole in this situation?
- How do I break this up into equal shares?
- Does this fraction have an easily calculated decimal equivalent?
- How can you find the decimal of this fraction?
- How did you calculate the percent?

Once the activity is complete, let them enjoy their snack! *(If today's portion is too small, you may give them an additional pickle to eat.)*

Snack Fraction Journal Writing: BLM Fruit Kabob-Snack Fractions
Justify how it is possible for 12 meats out of 40 ingredients to be more than 50% of the ingredients.

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 4 Lesson 2 – Snack Fractions
One per student

100-Calorie Snack Packs – Snack Fractions

Open both snack packs and combine contents. Keep the package for weight information.

1. Draw a pictorial representation of the whole in the space provided. PICTURE

   fraction _____ weight _____

Calibrate and use the balance to help answer the following questions. Divide the snack equally between you and your partner.

2. In relation to the original whole unit, your new portion is represented by:

   fraction _____ decimal _____

   percent _____ weight _____ **approximate*

3. Do you and your partner each have exactly half of the whole snack? Justify.

4. A friend wants to share your portion. By weight, how would you make sure you both have an equal amount? Do so.

5. In relation to the original whole unit, your new portion is represented by:

   fraction _____ decimal _____

   percent _____ weight _____ **approximate*

6. Your partner also had to share their snack with a friend. Write the equation you would use to find the fractional representation of your portion, your friend's portion, and your partner's portion combined. Find the total of the three portions.

7. Explain how using weight to divide something equally may be more accurate than using the method of quantity (counting pieces). Draw a picture to justify your reasoning.

Unit 4 Lesson 2 – Snack Fractions
One per student

100-Calorie Snack Packs – Snack Fractions

Abre ambos paquetes de refrigerios y combina los contenidos. Guarda el paquete para la información del peso.

1. Haz una representación gráfica del entero en el espacio provisto.

   fracción _____ peso _____

Calibra y usa la balanza para ayudarte a responder las siguientes preguntas. Divide los refrigerios de manera equitativa entre tú y tu compañero.

2. En relación con la unidad entera original, tu nueva porción está representada por:

   fracción _____ decimal _____

   porcentaje _____ peso _____ **aproximado*

8. ¿Tú y tu compañero tienen cada uno exactamente la mitad del refrigerio total? Justifica tu respuesta.

9. Un amigo quiere que compartas con él tu porción. Por peso, ¿cómo te asegurarías de que ambos tengan una cantidad igual? Hazlo así.

10. En relación con la unidad entera original, tu nueva porción está representada por:

    fracción _____ decimal _____

    porcentaje _____ peso _____ **aproximado*

11. Además, tu compañero tenía que compartir su refrigerio con un amigo. Escribe la ecuación que usarías para encontrar la representación fraccional de tu porción, la porción de tu amigo y la porción de tu compañero combinada. Encuentra el total de las tres porciones.

12. Explica cómo usar el peso para dividir algo en partes iguales puede ser más preciso que usar el método de cantidad (contando piezas). Haz un dibujo para justificar tu razonamiento.

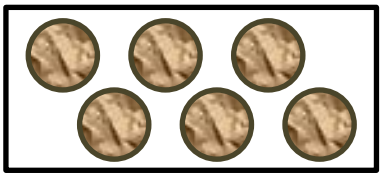
Unit 4 Lesson 2 – Snack Fractions
One per student

100-Calorie Snack Packs – Snack Fractions Teacher Guide

Some answers will vary based on the weight of the snack students are given. This key will use the snack pack with three mini cakes and a weight of 1.125 oz. (or 32 grams) as an example.

1. Draw a pictorial representation of the whole in the space provided. Set Model – students must define the whole by circling or boxing the snack pieces. This is NOT six separate wholes.
   fraction $\frac{6}{6}$ weight 1.125 oz or 32 grams

PICTURE



Calibrate and use the balance to help answer the following questions. Divide the snack equally between you and your partner.

2. In relation to the original whole unit, your new portion is represented by:
   fraction $\frac{3}{6}$ or $\frac{1}{2}$ decimal 0.5

   percent 50% weight 0.56 oz or 16 grams **approximate*

3. Do you and your partner each have exactly half of the whole snack? Justify.
   Yes. We compared their weights on the balance and they equaled each other or leveled out.

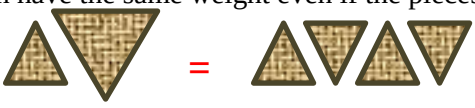
4. A friend wants to share your portion. By weight, how would you make sure you both have an equal amount? Do so. Estimate half of my portion then use the balance to make them exactly equal.

5. In relation to the original whole unit, your new portion is represented by:
   fraction $\frac{1}{4}$ decimal 0.25

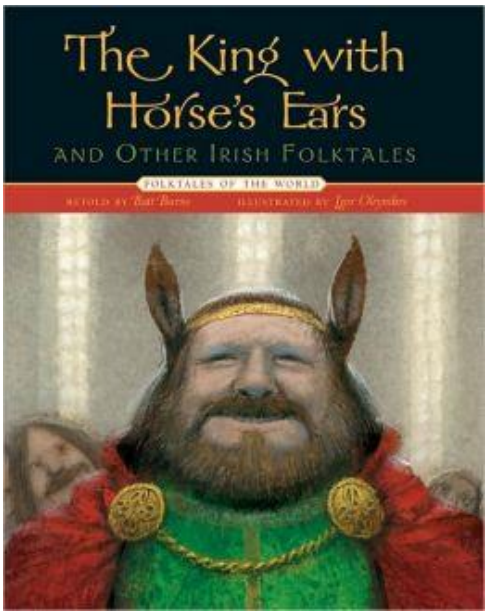
   percent 25% weight 0.28 oz. or 8 grams **approximate*

6. Your partner also had to share their snack with a friend. Write the equation you would use to find the fractional representation of your portion, your friend's portion, and your partner's portion combined.
   Find the total of the three portions. $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{3}{4}$

7. Explain how using weight to divide something equally may be more accurate than using the method of quantity (counting pieces). Draw a picture to justify your reasoning. Dividing by quantity only works when all of the pieces are the same size. Portions can have the same weight even if the pieces of the portion are different sizes or quantities are different.



Unit 4 Lesson 2 – Family Fun



Dear _____,

We continued working on math skills that Brohgawn (from "The Clever Leprechaun") may have used in his daily life.

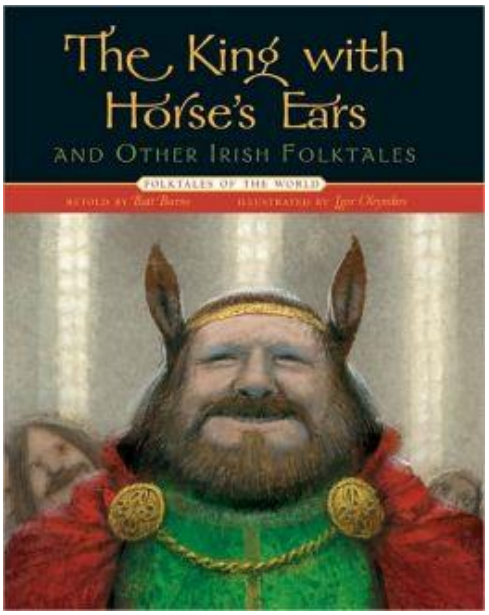
I use some of the math skills I learned during this lesson in my daily life when…

_____
_____
_____

Sincerely,

_____

Unit 4 Lesson 2 – Family Fun



Querido _____,

Continuamos con las destrezas matemáticas que Brohgawn (del cuento “El duende ingenioso”) tal vez usara en su vida diaria.

Uso las destrezas que aprendí en esta lección en mi vida diaria cuando…

_____
_____
_____

Atentamente,

_____

Materials

- **BLM** The Leprechaun Within You-Measurement Lab Record Sheet
- **BLM** picture of Brohgawn
- **BLM** Solve It! Problem 3
- **BLM** Fraction Action and *X* Marks the Spot
- **BLM** Lessons 1-3 CGI *The Clever Leprechaun*

Math Objectives

- Solve problems using a measurement tool and calculating measurements.
- Model and solve multistep word problems.
- Solve problems involving fractions, ratios and proportions.
- Solve for a variable.
- Compose and decompose numbers.

Language Objectives

- Speak to partners, teacher and class using vocabulary.
- Discuss problem solving process and strategies.

Math Vocabulary

fraction
4 representations of a fraction
decimal
benchmark
equivalent

Literature Vocabulary

apprentice
prosperous
haunt
secluded
wily
hapless
crevice
anguished
writhe
agony

Assessed TEKS for this Unit

5th – 5.3H, 5.3K
6th – 6.4C, 6.4D, 6.4E, 6.5B, 6.5C

Unit 4, Lesson 3 Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post-assessment. They are not optional.

ESSENTIAL

Measurement Lab

- Lesson 1 – *omit*
- Lesson 2 – Worth Your Weight (6th assessment item 1,3,6)
- **Lesson 3 – The Leprechaun Within You (5th assessment item 1,2,3)**

Lesson 3 Materials

- tape measure (inches)
- scissors

Lesson 3 Student Groups

Students will practice adding and subtracting fractions with unlike denominators. Answers will vary based on the height of each student.

- Partner pairs help measure each other's height to the nearest quarter-inch.
- Pairs cut out the picture of Brohgawn and measure his height to the nearest quarter-inch. *(He measures 8.25 inches.)*
- Students calculate how many Brohgawn's it will take to equal their height.

Solve It! Multi-step problem solving

- Lesson 1 - triads, 3-step (5th asmnt item 4, 5; 6th asmnt item 8)
- Lesson 2 - triads, 3-step (5th asmnt item 4, 5; 6th asmnt item 7)
- **Lesson 3 - independent, 3-step (5th asmnt item 4,5; 6th asmnt item 4)**

Fraction Action

- Lesson 1 – *omit*
- Lesson 2 – (5th assessment item 1,2,3)
- **Lesson 3 – (5th assessment item 6)**

***X* Marks the Spot**

- Lesson 1 – *omit*
- Lesson 2 – (6th assessment item 7)
- **Lesson 3 – (6th assessment item 4)**

CGI

- Lesson 1 – Part-Part-Whole (5th assessment item 4)
- Lesson 2 – Compare Referent Unknown (5th assessment item 5)
- **Lesson 3 – Price Partitive Division (6th assessment item 6)**

ELPS (*English Language Proficiency Standard*) 2D, 2E, 2H, 3B, 3D, 3H, 4C **CCRS** (*College and Career Readiness Standards)* CROSS-CURRICULAR I.B.1., I.C.1., I.C.2., I.C.3., II.A.4. ELA II.A.3., II.B.1., III.B.1., MATH I.B.1., II.A.1., VI.A.1., VIII.A.3., VIII.A. 4.	**Unit 4, Lesson 3** **Grades 5-6** **Daily Routine** - continued **----------** **The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.** **----------** **OPTIONAL** **Target Number** • Lesson 1 – *omit* • Lesson 2 – Target Number 15 • **Lesson 3 – Target Number 45** **Money Matters** (*If you have a full program and wish to use this optional activity, you will find BLMs and Explanations on MAS Space.)*

Unit 4 Lesson 3 – Daily Routines – Measurement Lab
One per student

The Leprechaun Within You – Measurement Lab Record Sheet

Materials:

- tape measure
- scissors
- **BLM** picture of Brohgawn

Task:

- Using the tape measure, find your height and your partner's height to the nearest quarter-inch.
- Cut out the picture of Brohgawn and measure his height to the nearest quarter-inch (from bottom of shoes to top of hat, or the black line provided).
- Use the measurements to complete the activity.

your height _____

partner's height _____

Brohgawn's height _____

1. How much taller are you than Brohgawn?

2. How much taller is your partner than Brohgawn?

3. How many Brohgawn's will it take to equal your height? Write an equation and draw a pictorial representation to prove your answer.

Unidad 4 Lección 3 – Rutinas diarias – Laboratorio de medición
Una por estudiante

El duende dentro tuyo - Hoja de registro del laboratorio de medición

Materiales:

- cinta métrica
- tijeras
- Dibujo de Brohgawn **BLM**

Tarea:

- Con la cinta métrica, mide tu altura y la de tu compañero hasta el cuarto de pulgada más cercano.
- Recorta la imagen de Brohgawn y mide su altura hasta el cuarto de pulgada más cercano (desde la parte inferior de los zapatos hasta la parte superior del sombrero, o la línea negra provista).
- Usa las medidas para completar la actividad.

tu altura _____

la altura de tu compañero _____

la altura de Brohgawn _____

4. ¿Cuánto más alto eres tú que Brohgawn?

5. ¿Cuánto más alto es tu compañero que Brohgawn?

6. ¿Cuántos Brohgawns se necesitarían para igualar tu altura? Escribe una ecuación y haz una representación gráfica para demostrar tu respuesta.

Unit 4 Lesson 3 – Daily Routines – Measurement Lab
One per student

Brohgawn

_____ **inches**

Unit 4 Lesson 3 – Daily Routines - Solve It! Problems (individual)
One per student

Problem #3:
Travis bought a new custom couch set for $1199.00 and a coffee table for $399.00. The tax added to his bill for the customization was 10%. What was his total bill?

Problem Solution Name:	**Solution Verification** Name:

Unit 4 Lesson 3 – Daily Routines - Solve It! Problems (individual)
One per student

Problema n.º 3:
Travis compró un nuevo juego personalizado de sofá por $1199.00 y de mesa ratona por $399.00. El impuesto agregado a su factura por la personalización fue del 10%. ¿Cuál fue su factura total?

Solución del problema **Nombre:**	**Verificación de la solución** **Nombre:**

Unit 4 Lesson 3 – Daily Routines - Solve It! Problems (independent) **5-6**
One per student

Partner 2 - Problem 6:
Elaine bought a bedroom set for $899.00 and a custom-made patio set for $699.00. The tax added to the bill for the customization was 10%. What was the total bill?

Problem Solution Name:	**Solution Verification** Name:

Unit 4 Lesson 3 – Daily Routines - Solve It! Problems (individual)
One per student

Problema n.º 3:
Elaine compró un nuevo juego personalizado de sofá por $899.00 y un juego personalizado para el patio por $699.00. El impuesto agregado a su factura por la personalización fue del 10%. ¿Cuál fue su factura total?

Solución del problema **Nombre:**	**Verificación de la solución** **Nombre:**

Materials
- **5 3x5 index cards per student**
- **BLM folktale elements/plot chart (lesson 2)**
- **BLM** Fraction and Decimal Cards-C (2 pages)
- blue painter's tape or masking tape

Literature Selection
The King with Horse's Ears
retold by Batt Burns
selection ***Just One Choice***
page 52

Math Vocabulary
fraction
4 representations of a fraction
decimal
benchmark
equivalent

Literature Vocabulary
apprentice
prosperous
haunt
secluded
wily
hapless
crevice
anguished
writhe
agony

ELPS (*English Language Proficiency Standard*)
1C, 2D, 2F, 3B, 3D, 4G, 4J, 4K

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.A.2., I.F.1., II.A.2., II.A.3., II.A.4.
ELA II.A.1., II.A.3., II.A.4., II.A.5., II.A.10., II.C.2.

Unit 4, Lesson 3 Grades 5-6

Classroom Lesson

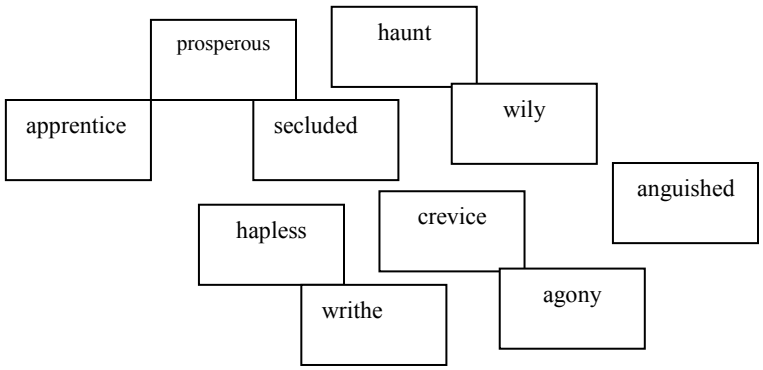
Every day teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

Math Objectives:
- Use models to relate decimals to fractions.
- Generate equivalent forms of rational numbers including whole numbers, fractions and decimals.
- Compare and order non-negative rational numbers.

Language Objectives:
- use the context of the sentence to determine the meaning of unfamiliar words or multiple meaning words
- summarize and explain the lesson or message of a work of fiction as its theme
- listen attentively to speakers, ask relevant questions, and make pertinent comments
- write literary texts to express their ideas and feelings about real or imagined people, events, and ideas

---

BEFORE READING
Building Background – Vocabulary and Literature
Distribute 5 3x5 index cards to each student (if you have an even number of students). Partner students with one another. Direct students to write one literature vocabulary word on each card until all ten words are written.



Direct the students to touch each card and read aloud the word with their partner. Then, touch and read faster.
Students will alphabetize the words with their partner. Depending on the level of your students, you can set a time limit for fluency of alphabetizing. When complete, the class will read aloud the words as arranged to check word ordering.

SAY: Hold up the card with the correct word written on it for each of these questions or clues.

ASK: Which word is the opposite of pleasure? This word has three syllables. (agony)

ASK: This one syllable word originates from an Old French term meaning 'home'. Today it would name a hangout. (haunt)

ASK: I would use this term to describe someone who is unlucky in many things. (hapless)

ASK: This is a good adjective to describe someone who never gives up on something they want. (persistent)

ASK: If you wanted to wish someone a healthy and happy new year, you would describe their new year as this. (prosperous)

Teacher Note
The math objectives covered in the Transition to Math Lesson are not assessed items, but do lay the foundation for understanding the concepts taught in the TV Lesson. This activity is necessary and relevant.

ASK: This three syllable word comes from two Latin roots. The first meaning 'apart' and the second meaning 'to shut'. This word would also be a great adjective to describe a place that is out of sight from busy traffic. (secluded)

ASK: Which word names something you might find in a large rock wall? I might call it a crack. (crevice)

ASK: The origin of this word comes from coil. It is an action one might do if they felt intense pain which caused them to coil their body. (writhe)

SAY: Your turn! There are three words remaining. With your partner you alphabetized with, create three clues to share with the class. We will guess the word you are thinking.
Allow students time to create their clues. Encourage them to use their definitions reviewed in Lesson 1.
Once students are complete (option: set a time limit conducive to the class) pair groups together. Groups share their questions/clues and guess the words.

Figure 1

SAY: Today we will be reading another folktale from Ireland. The title is ***Just One Choice.*** As we read the story, listen for the folktale elements. We will check off the elements included in this folktale.
ASK: Have you heard of the Giants Causeway?

Allow for students to respond. Some might have read or heard the folktale told explaining the creation of the causeway.
SAY: The Giant's Causeway is located at the northern coast of Ireland. There is one common legend explaining the creation of the Causeway.
Watch the video and/or visit the website to view pictures of the causeway.
http://vimeo.com/45569144
http://video.nationalgeographic.com/video/uk_giantscauseway
SAY: Irish folk have many myths and legends surrounding the brown seals that frequent the coast of Ireland. Let's read the folktale and find out what the 'one choice' might be.

DURING READING
Comprehensible Input - Vocabulary and Literature
Teacher reads aloud the italicized introduction to *Just One Choice* page 52.
ASK: What is special about the seals said to inhabit the area of the Giant's Causeway?
Think, share with your partner.

NOTE: depending on the reading level of your students, they may popcorn in reading or teacher may continue to read and model thinking processes.

Continue reading on page 52. Stop after reading *"…had been left in his place."*
ASK: Why would Jackie and Nancy cradle a baby boy closely?
Think, share with your partner.
SAY: There was a word we read I was not sure what it means. Toward the end of the last paragraph we read: "a healthy baby boy had been spirited away, and miserable changeling had been left in his place." I understand the baby was taken and something not so nice was left in its place because it is described a miserable. I'm not sure what a changeling is though. I know it's a noun and the word contains change…I wonder if that means it can change. Let's see if this vocabulary word is in the glossary. (turn to back of book and locate changeling in the glossary).

SAY: We were correct that changelings are a thing, a noun. They cannot change, they only look like the baby that was taken by the faeries.

Unit 4, Lesson 3 Grades 5-6
Classroom Lesson - continued

Continue reading on page 52. Stop after reading "…will give birth to a boy." on page 54
Let's read over the folktale elements and check off any of those that have been included in this folktale.
ASK: What differences in the elements exist between this folktale and the last one we read?
Allow students to respond.
ASK: Who are the main characters in this folktale?
Write the students responses on the board.
ASK: Where does this story take place?
Record the students' responses.
ASK: What is an example of personification in the folktale?
Personification is giving something human qualities. Personification, like an animal speaking or acting like a human could be characterized as magic in the folktale elements.
Record the students' responses.

Continue reading on page 54. Stop after reading last sentence on page 54.
ASK: What do you predict will happen next? Why do you think that?
Allow students to share predictions and reasons.

Continue reading on page 55. Stop after reading *"…took the mug and drank it all."*
ASK: What do predict will happen? Why do you think this?
Allow students to share predictions and reasons.

Continue reading on page 55. Stop after reading *"…seen down there again."*
ASK: What is the problem in this folktale? There might be several problems, which could be considered the most important problem creating the entire folktale?
Think, share with a partner. Share thoughts with class.

ASK: There is still quite a bit remaining to this folktale. How do you think Jackie will solve his family's problems?

Continue reading at the bottom of page 55. Stop after reading "…who would never again speak." on page 57.
ASK: Which do you think Jackie will wish for? Why do you think this?

Continue reading on page 57. Stop after reading "…our child must come first." on page 58.
ASK: Why did Jackie describe the decision as 'cruel'?
Think, share with partner.

NOTE: Depending on the reading level of your students- the remainder

of the story may be read silently and then with a partner or read silently then as an entire class.

Continue reading on page 58. Stop after the last sentence.
ASK: What was the supernatural power of the leaf?
Think, share with partner, share with class.
ASK: Why do you think this was the supernatural power of the leaf?
Allow students to respond.

ASK: What was the solution to the problem in the story?
Think, Share with a partner, share with class.
ASK: Why would there be shouts of joy and laughter awaiting Jackie?
Allow students to think and share.

SAY: Review the folktale elements listed on the BLM. Check off any additional elements in this folktale.

AFTER READING

Practice and Application – Vocabulary and Literature

Partner the students together and allow them to share the elements they have checked off and provide their partner with examples from the story to support their choices.

While students are sharing with partners, post a large post-it (or large poster board) in each corner of the room. Number the students 1-4. All of the 1s to one corner, 2s to another, and so forth.

Students will complete four corners for review of this folktale adding to each corner with their group. Set a time limit depending on the remaining time available for class. Students can select one recorder to write responses. The goal is to create a short summary of the folktale.

Corner 1: What was the author's purpose in writing this folktale? Think about the moral or lesson learned.

Corner 2: What was the problem in the folktale?
Several minor problems might be presented as well.

Corner 3: What was the solution to the problem(s)?

Corner 4: Draw one simple illustration for an event in this folktale. This corner can contain several small index cards for each student to illustrate on.

After each corner has been visited, the groups can select one to two spokespersons to read their responses for each corner.

ELPS (*English Language Proficiency Standard*)
1E, 2E, 2G, 3B, 3D, 3F, 4F, 4H

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.C.1., I.C.2., II.A.2., II.D.1.
MATH I.B.1., VI.B.1., IV.B.1., IV.B.2., VI. B.4.,

Transition to Math

Same activity as the Transition to Math from Lesson 1 and 2 but with different benchmark fractions. This activity will allow students the opportunity to visualize the many different equivalencies between the four representations of a fraction and decimals on a number line.

Activity Focus:

- benchmark fractions of **one-tenth**
- equivalencies between the four representations of a fraction and decimals *(commonly used area model only for this lesson)*

Activity Directions:

- Initial Prep - Using blue painters tape, create a horizontal number line on the wall big enough to hold all of the Fraction and Decimal Cards. Only provide tick marks where **1 and 2** will be placed. You may leave the tick mark halfway between as well. However, do not label the tick marks.
  Shown in Figure 1.
- Initial Prep – Cut out Fraction and Decimal Cards. Divide into equal groups based on number of student groups.
- Divide students into groups of three or four.
- Provide them with a set of random Fraction and Decimal Cards.
- Allow students to work within their own groups, between groups, and as a whole class to correctly place the cards on the number line.
- Hold a whole class discussion and analyze the card placements. Focus on the equivalencies.

Questions to ask:

- How did you know that card should be placed in that particular spot?
- Did you have to adjust any of the cards? Why?
- Is this an area model or set model? How do you know?
- When do you see these benchmarks in real life?

Students may finish this activity during the Follow-up Lesson if needed.

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

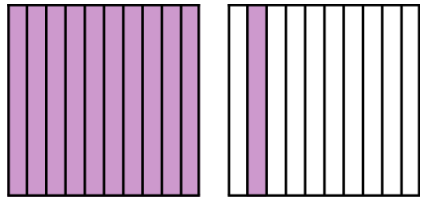
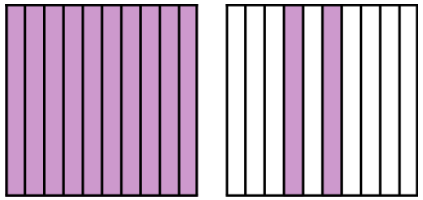
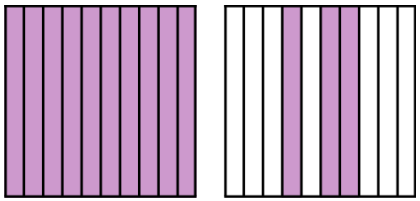
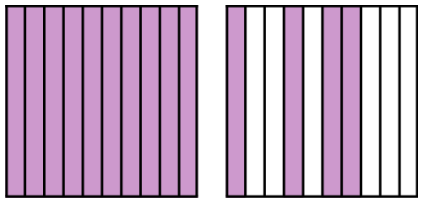
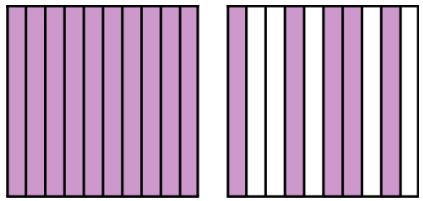
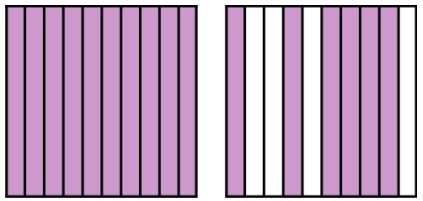
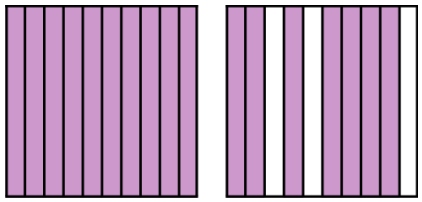
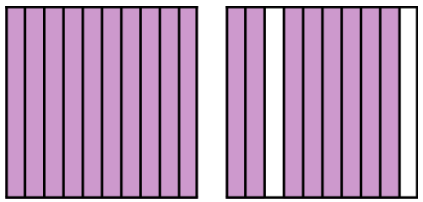
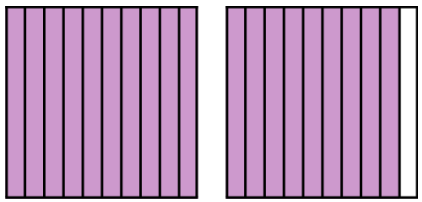
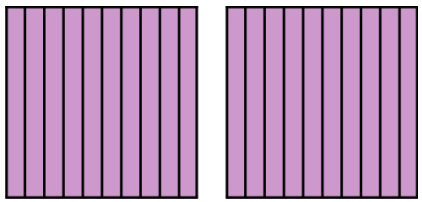
Unit 4 Lesson 3 – Transition to Math
One set per class

Fraction and Decimal Cards - C (1/2)

1	2	$1\frac{1}{10}$	$\frac{12}{10}$
$1\frac{3}{10}$	$\frac{14}{10}$	$1\frac{5}{10}$	$\frac{16}{10}$
$1\frac{7}{10}$	$\frac{18}{10}$	$1\frac{9}{10}$	1.0
1.1	1.2	1.3	1.4

Unit 4 Lesson 3 – Transition to Math
One set per class

Fraction and Decimal Cards - C (2/2)

1.5	1.6	1.7	1.8
1.9	2.0	shaded? 	shaded? 
shaded? 	shaded? 	shaded 	shaded? 
shaded? 	shaded? 	shaded? 	shaded? 

Materials
- **BLM** Equivalency Chart from Lesson 1 (Lesson 3 only)
- **BLM** The Clever Tenths (1 of 2)
- **BLM** The Clever Tenths (2 of 2)

Math Vocabulary
fraction
4 representations of a fraction
decimal
benchmark
equivalent

Literature Vocabulary
apprentice
prosperous
haunt
secluded
wily
hapless
crevice
anguished
writhe
agony

ELPS (*English Language Proficiency Standard*)
1E, 1F, 2G, 3D, 3F, 3H, 4F, 5B, 5C

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.1., I.C.2., I.E.1., II.B.2.
ELA I.A.2., II.A.2., II.A.3., III.B.2., IV.A.3.
MATH I.B.1., I.C.1., II.B.1., II.C.1., IV.B.1., VIII.A.1., VIII.A.3., VIII.A.4.

Unit 4, Lesson 3 — Grades 5-6

TV Lesson

Math Objectives:
- Add and subtract positive rational numbers fluently.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Building Background
Students officially solved mixed rational number problems in Lesson 1 and 2 of this unit.

They will use the knowledge of benchmark fractions, decimals and equivalencies gained in the Transition to Math number line activity during the TV Lesson.

Comprehensible Input
Students will solve problem situations that involve adding and subtracting positive rational numbers. However, the word problems use specific fractions *(tenths)* and decimals to allow students extra practice with benchmarks and equivalencies. Students are encouraged to continue to practice mental math strategies to find solutions.

The problems on the BLM can be solved by either changing all quantities to decimals or fractions. Both solution strategies are covered in this lesson. Students should first fill in the Equivalency Chart to make relationships between the unit of measure to the fractions and decimals. Complete Lesson 3 Chart only.

Brohgawn's Distances – Decimals to Fractions
Students will follow along with the TV teacher and change the decimals to fractions for this particular problem.

Follow the same process as Lesson 1 and 2, making sure to relate the decimals and fractions to the unit of measure. Discuss place value, the tenths place, and how easily the decimals convert to fractions.

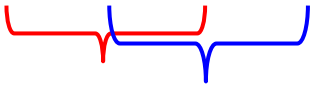
New equation: $\mathbf{1\frac{1}{2} + 2\frac{4}{10} + 2\frac{7}{10} + 2\frac{6}{10} + 1\frac{9}{10} = ???}$

The first term should be converted to $1\frac{5}{10}$ in order to create common denominators. However, the intent is not to have students solve the equation with a standard algorithm. At this point students should add the whole numbers, and then the fractional pieces.

Whole meters combined = 1 + 2 + 2 + 2 + 1 = 8 meters.

Fractional pieces are combined as shown below.

$$\mathbf{1\ \frac{5}{10} + 2\ \frac{4}{10} + 2\ \frac{7}{10} + 2\ \frac{6}{10} + 1\ \frac{9}{10} = ???}$$



There are many different ways to combine the fractional pieces. Encourage students to look for compatible numbers that lead to wholes, such as the pairing $\frac{4}{10}$ and $\frac{6}{10}$. *(red bracket)*

They might choose to combine $\frac{7}{10}$ and $\frac{9}{10}$ totaling $1\frac{6}{10}$. *(blue bracket)*

Compatible numbers would suggest that they only need four more tenths to create another whole. That is possible since five-tenths remains in the equation. Therefore, $1\frac{6}{10}$ combined with $\frac{5}{10}$ results in two wholes with $\frac{1}{10}$ left over. Be sure to model how to combine fractions with compatible numbers that build to whole units.

New equation:

8 m (sum of wholes) + 1 m (red bracket) + 2 $\frac{1}{10}$ m (blue bracket)

(Brohgawn threw his mushroom a total distance of 11 $\frac{1}{10}$ meters.)

Peevish O'Brian's Distances – Fractions to Decimals

Follow the same process as Lesson 1 and 2, making sure to relate the decimals and fractions to the unit of measure. Discuss place value, the tenths place, and how easily the decimals convert to fractions.

Students should realize the fraction $2\frac{4}{5}$ will require manipulation in order to create a common denominator. Doubling the fraction will preserve its value while changing the denominator to the unit size used in the rest of the distances *(tenths)*. The equivalent fraction is $2\frac{8}{10}$. The new fraction simply converts to 2.8 meters.

Teacher Note
Talk through the process of adding the fractional pieces as if they were chocolate chip cookies (instead of tenths). Children sometimes lose sight that the denominator is a label, or a name. It helps to give quick examples. The new equation is provided to organize the partial summations.

New equation: **2.3 + 2.2 + 2.8 + 1.9 + 2.1 = ???**

The addition of decimals in this particular problem situation shouldn't take long. Again, students should combine partials.

Whole units = 2 + 2 + 2 + 1 + 2 = 9 whole meters

Decimal units = (0.2 + 0.8) + (0.9 + 0.1) + 0.3 = 2.3 meters

Combine the two partial summations to get 11.3 meters.

Compare total distances between both leprechauns:

$$\mathbf{11\ \frac{1}{10}\ meters\ <\ 11.3\ meters}$$

"Who will have to brew a pot of dandelion tea?" *(Brohgawn because his distance was two-tenths of a meter shorter than Peevish.)*

Fairies in the Meadow – Fractions to Decimals

This example provides the steps for changing fractions to decimals, but allows students to choose which method they prefer.

New equation: **3.5 hrs (dew) + 2.2 hrs (frost) + 4.9 hrs (dry time)**

With simple addition the combined time = 9 whole hours + 1.6 decimal hours with a total time of 10.6 hours.

Fairies in the Meadow – Terms of Time

"Do we normally refer to time as tenths of an hour?" *(No. Time is usually given in hours and minutes.)*

"What does it mean to have six-tenths of an hour?" *(one-tenth = six minutes from the Equivalency Chart. Therefore, six groups of six minutes equals 36 minutes.)*

(The total process from dew drops to completely dry takes 10 hours and 36 minutes.)

Pirate's Corner

Can you think of another example of when a "quarter" has a different value? If so, go to MAS Space and tell Captain Portio and the TV Teacher!

Objectives

Read through the math and language objectives, making sure that students understand how they accomplished each.

Teacher Note

Students need to fill in the rest of the chart for problem #1. If it was not covered in the TV Lesson, they may use time during the Follow-up.

Time permitting, continue on to problem #2. If it was not covered in the TV Lesson, they may use time during the Follow-up.

The Clever Tenths (1 of 2)

Work with your teacher and in groups to solve the problems.

1. Peevish O'Brian challenged Brohgawn to a mushroom toss across the clearing in the forest. Each leprechaun must throw a mushroom as far as he can five times in a row. Whoever throws the mushroom the shorter distance has to brew the winner a large pot of dandelion tea. Based on the distances provided, which leprechaun will have to serve tea tonight?

Toss	Brohgawn	Peevish O'Brian
1	$1\frac{1}{2}$ meters	$2\frac{3}{10}$ meters
2	2.4 meters	2.2 meters
3	2.7 meters	$2\frac{4}{5}$ meters
4	$2\frac{6}{10}$ meters	$1\frac{9}{10}$ meters
5	1.9 meters	2.1 meters

Use the table below to show your work with the fraction strategy and the decimal strategy.

Name	Fraction	Decimal
Brohgawn		
Peevish O'Brian		

Los décimos ingeniosos (1 de 2)

Colabora con tu maestro y en grupos para resolver los problemas.

2. Peevish O'Brian desafió a Brohgawn a una tirada de hongos en el claro en el bosque. Cada duende debe tirar un hongo lo más lejos que pueda, cinco veces seguidas. El que tire el hongo a la distancia más corta, le tiene que preparar al ganador un gran tarro de té de diente de león. En función de las distancias provistas, ¿qué duende tendrá que servir el té esta noche?

Toss	Brohgawn	Peevish O'Brian
1	$1\frac{1}{2}$ metros	$2\frac{3}{10}$ metros
2	2.4 metros	2.2 metros
3	2.7 metros	$2\frac{4}{5}$ metros
4	$2\frac{6}{10}$ metros	$1\frac{9}{10}$ meters
5	1.9 meters	2.1 meters

Usa la siguiente tabla para mostrar tu trabajo con la estrategia de fracción y la estrategia decimal.

Nombre	Fracción	Decimal
Brohgawn		
Peevish O'Brian		

Unit 4 Lesson 3 – TV Lesson

The Clever Tenths (2 of 2)

1. To prepare for sunrise, the fairies of Lissarree spend $3\frac{1}{2}$ hrs. covering the meadow with dew drops. If the weather is just right, the fairies are granted permission to bestow the first frost of the season on the small village. They only have to spend 2.2 hrs. freezing the delicate dew drops. When the sun starts to peek over the hills, the warmth causes the crystals to melt and dry up completely in 4.9 hrs. How long is the total process from when the fairies sprinkle dew drops until the sun completely dries the meadow?

Fraction	Decimal

2. Use your knowledge of tenths of an hour to write the solution in terms of time (hours and minutes).

The Clever Tenths (2 of 2)

3. Para prepararse para el amanecer, las hadas de Lissarree pasaron $3\frac{1}{2}$ horas cubriendo la pradera con gotas de rocío. Si el clima es el ideal, las hadas reciben permiso para conceder la primera helada de la estación en la pequeña aldea. Solo tienen que pasar 2.2 horas congelando las delicadas gotas de rocío. Cuando el sol comienza a asomarse sobre las colinas, el calor hace que los cristales se derritan y se sequen por completo en 4.9 horas. ¿Cuánto dura el proceso total desde que las hadas esparcen gotas de rocío hasta que el sol seca por completo la pradera?

Fracción	Decimal

4. Utiliza tu conocimiento sobre décimos de una hora para escribir la solución en términos de tiempo (horas y minutos).

Materials
- Family Fun Generic Game Board
- Family Fun Movement Cards
- Unit 4 Family Fun Problem Cards for grades 5-6 (yellow)
- Family Fun Answer Key for Unit 4 (all grade bands)
- Unit 4 Family Fun Special 5th – 6th Game Instructions
- game markers
- **BLM** Recursive Review Problems Lessons 1-3

Math Vocabulary
fraction
4 representations of a fraction
decimal
benchmark
equivalent

Literature Vocabulary
apprentice
prosperous
haunt
secluded
wily
hapless
crevice
anguished
writhe
agony

ELPS (*English Language Proficiency Standard*)
1F, 2E, 2F, 2H, 3C, 3F, 4F, 4J, 5B

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.C.1., I.C.2., II.B.1., II.B.2.
ELA I.A.1., I.A.2., II.A.2., III.B.1., III.B.2., IV.A.3.
MATH I.B.1., I.C.1., II.B.1., IV.B.1., VIII.A.1., VIII.A.3.

Unit 4, Lesson 3 — Grades 5-6
Follow-up

Math Objectives:
- Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.
- Use addition and subtraction to solve problems involving whole numbers and decimals.
- Add and subtract positive rational numbers fluently.
- Use ratios to describe proportional situations.
- Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models.
- Represent ratios and percents with concrete models, fractions and decimals.
- Use ratios to make predictions in proportional situations.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Practice and Application
Allow students to use this time to complete the problems from the TV Lesson. It is imperative, however, that they learn and play the Unit 4 Family Fun Game. Like Unit 2 and 3, the game reviews all objectives covered on the assessments for 5th and 6th grade.

Recursive Review
Please use **BLM** *to answer the Recursive Review questions.*

- It takes an average of five gallons of paint to cover the walls in two bedrooms. How many gallons of paint will be needed to paint ten rooms? *Use equivalent ratios to solve.*

Writing Topics
Independent Writing Topic
Students will have a daily writing activity which will incorporate the day's focus math vocabulary.

- **Explain the difference between a linear and an area model.**

Objectives
Review the math and language objectives to make sure that they were accomplished and that the students realize how they were accomplished.

Materials
- 3 whole graham cracker sheets
- 2 TBS peanut butter

Allergy Warning – please substitute a different spread for the entire class if nut allergies are present.

- 2 paper dessert plates
- 2 paper towels

All items listed above per partner pair

- **BLM** Crackers and Peanut Butter-Snack Fractions - 1 per student
- **BLM** Crackers and Peanut Butter-Snack Fractions Teacher Guide

Math Vocabulary
fraction
4 representations of a fraction
decimal
benchmark
equivalent

Literature Vocabulary
apprentice
prosperous
haunt
secluded
wily
hapless
crevice
anguished
writhe
agony

Unit 4, Lesson 3 — Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios and percents.
- Convert between fractions, decimals and percents.
- Estimate to find solutions to problems involving fractions, decimals and percents.

Language Objectives
- Discuss how fractions, decimals, ratios and percents can be used to solve real-world problems.

Snack Fractions
The Snack Fraction activities for this unit will focus on combining and separating fractional parts as well as dividing into fourths. Students will learn how to divide multiple whole units into fractional portions. Some of the percents in this lesson are larger than one. It will be easy for students to mistake the three wholes as one whole unit. They are separate. Each whole is its own 100%. A Teacher Guide for the BLM is provided.

QUESTIONS
- What is the whole in this situation?
- How do I break this up into equal shares?
- What does that fraction represent?
- Does this fraction have an easily calculated decimal equivalent?
- How can you find the decimal of this fraction?
- How did you calculate the percent?

Once the activity is complete, let them enjoy their snack!

Snack Fraction Journal Writing: BLM Crackers and Peanut Butter
Explain how percents are affected when the fraction is larger than one.

Objectives: Review the objectives with the class, making sure they understand how they achieved each.

Unit 4 Lesson 3 – Snack Fractions
One per student

Raisin Bread and Banana – Snack Fractions

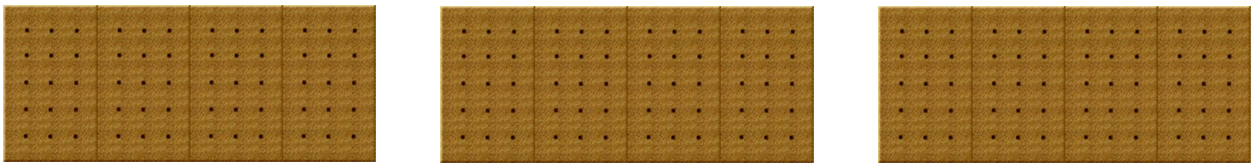
Divide the snack equally between you and your partner. Work together to solve the problems.

1. What is defined as the whole unit? _____

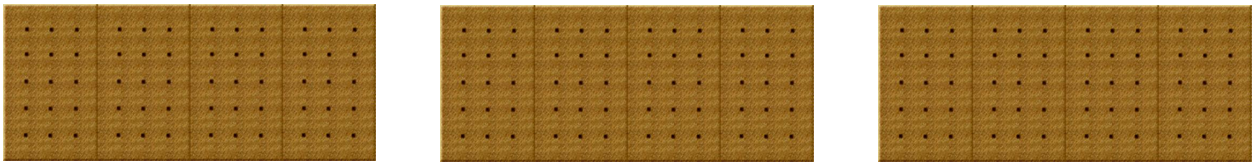
2. What fraction represents your portion?

   fraction _____ decimal _____ percent _____

3. Use the picture to model how you divided the crackers between you and your partner.



4. Two best friends join your group and want to share the snack. Use the picture to model how you would divide the crackers between you, your partner, and two friends.



5. What fraction represents your new portion out of the whole?

   fraction _____ decimal _____ percent _____

6. What fraction represents your portion and two partners out of the <u>whole</u>? Write an equation to prove your answer.

7. If you spread peanut butter evenly on your portion, what percent of the peanut butter is on each piece?

Unidad 4 Lección 3 – Fracciones de refrigerios
Una por estudiante

Pan de pasas y plátanos - Fracciones de refrigerios

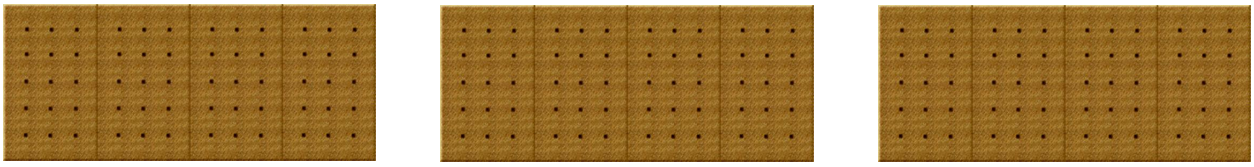
Divide los refrigerios de manera equitativa entre tú y tu compañero. Trabajen juntos para resolver los problemas.

8. ¿Qué se define como la unidad entera? _____

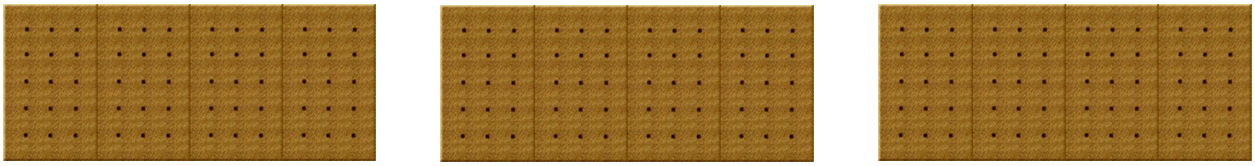
9. ¿Qué fracción representa tu porción?

   fracción _____ decimal _____ porcentaje _____

10. Usa la imagen para modelar cómo dividiste las galletas entre tú y tu compañero.



11. Dos mejores amigos se unen a tu grupo y quieren compartir el refrigerio. Usa la imagen para modelar cómo dividirías las galletas entre tú, tu compañero y los dos amigos.



12. ¿Qué fracción representa tu nueva porción del entero?

    fracción _____ decimal _____ porcentaje _____

13. ¿Qué fracción representa tu porción y la de dos compañeros del entero? Escribe una ecuación para demostrar tu respuesta.

14. Si untaras mantequilla de maní de forma pareja en tu porción, ¿qué porcentaje de la mantequilla de maní quedaría en cada porción?

Unit 4 Lesson 3 – Snack Fractions
One per student

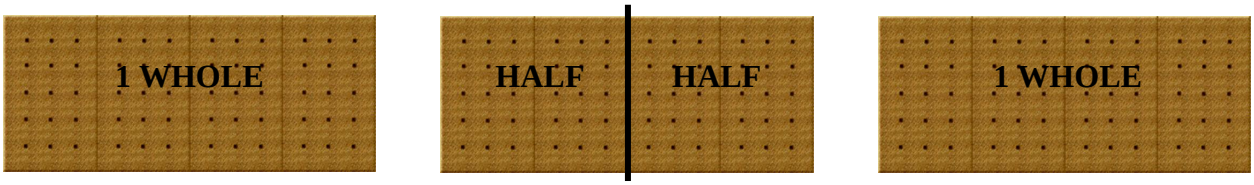
Raisin Bread and Banana – Snack Fractions Teacher Guide

Divide the snack equally between you and your partner. Work together to solve the problems.

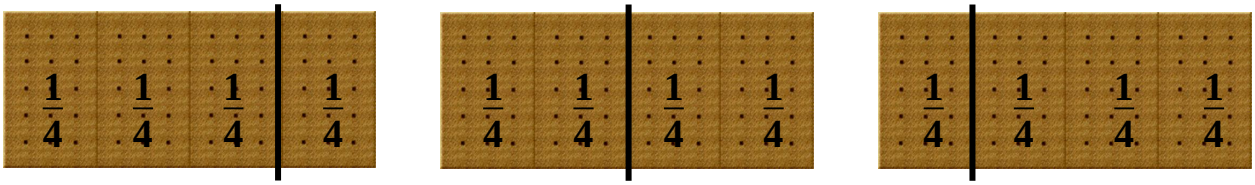
1. What is defined as the whole unit? 1 graham cracker sheet

2. What fraction represents you portion?
   fraction $1\frac{1}{2}$ decimal 1.5 percent 150% (100% represents 1-whole of your portion and 50% represents the other half of your portion)

3. Use the picture to model how you divided the crackers between you and your partner.



4. Two best friends join your group and want to share the snack. Use the picture to model how you would divide the crackers between you, your partner, and two friends.



Each section or portion totals three-fourths. The portion is NOT three-twelfths. The whole (one graham cracker sheet) is divided in fourths not twelfths.

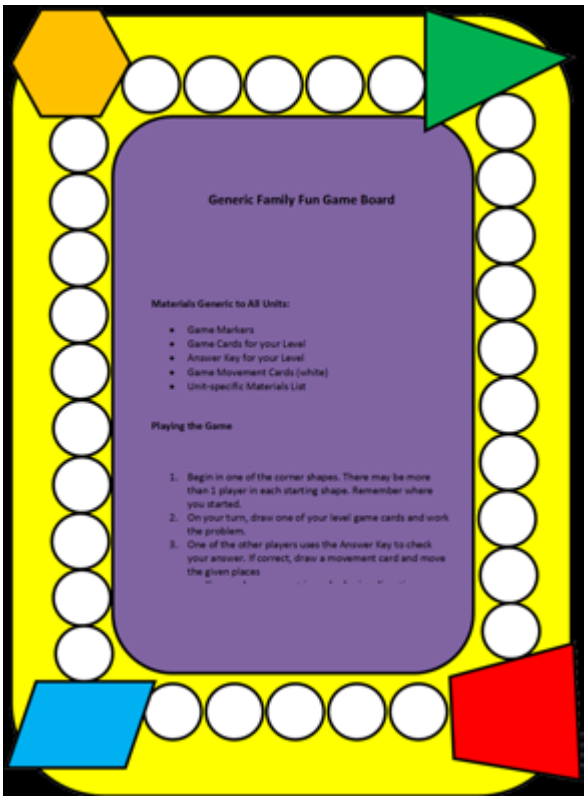
5. What fraction represents your new portion out of the whole?

   fraction $\frac{3}{4}$ decimal 0.75 percent 75%

6. What fraction represents your portion and two partners out of the <u>whole</u>? Write an equation to prove your answer. $\frac{3}{4} + \frac{3}{4} + \frac{3}{4} = \frac{9}{4}$ or $2\frac{1}{4}$

7. If you spread peanut butter evenly on your portion, what percent of the peanut butter is on each piece of your portion? If students divided the whole into fourths as shown above, then the portion has three separate pieces (three-fourths). Peanut butter divided equally between three pieces means 33% of the peanut butter is on each piece of the portion.

Unit 4 Lesson 3 – Family Fun



Dear _____,

It's Family Fun game time!

The game will still cover all of the concepts on the test. After more practice, I feel better about this strategy…

_____

because…

_____

_____

_____

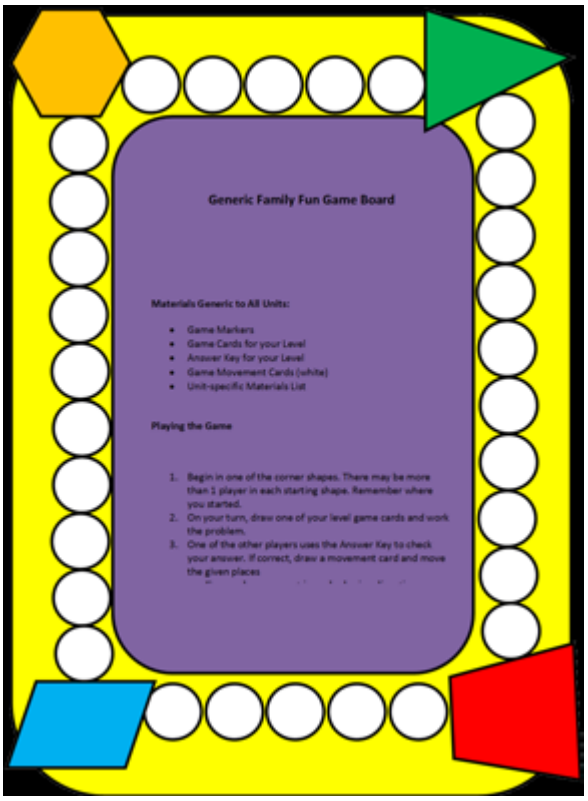
_____

_____

Sincerely,

_____

Unit 4 Lesson 3 – Family Fun



Querido _____,

¡Es hora de jugar el juego para la familia!

El juego repasa todos los conceptos en el examen. Despues de más práctica, tengo más confianza en cuanto esta estrategia…

_____
porque…
_____
_____
_____
_____
_____

Atentamente,

This portion of the curriculum is NOT required, but should be used to supplement and enrich the Unit's activities.

Torn Construction Paper Art Project

Enrichment Suggestions 5-6

Unit 4 ***The Clever Leprechaun***

Math Walk

Walk around the school and make a list and take pictures of three objects or items that:

1. weigh approximately one ounce
2. weigh approximately one pound
3. have the same exact height as Brohgawn (8.25 inches)
4. are divided into fourths
5. are divided into thirds
6. are divided into halves
7. are divided into tenths

As a collective group, create posters of each category and display the pictures on the posters.

Technology Connection

https://itunes.apple.com/us/app/gold-price/id293755872?mt=8
Gold Price – App on iTunes that allows you to track the value of gold all over the world.

More Curriculum Connection Ideas off the Web

- **Social Studies:**
  http://en.wikipedia.org/wiki/Folklore
  History and information about folklore
- **Science**:
  http://www.youtube.com/watch?v=0V8miZORg6Y
  Rainbow Instant Snow Experiment
  http://www.youtube.com/watch?v=Z0Zwjs6B39M
  Rainbow Silly Squares – Polymer Stackers
- **Art:**
  http://www.youtube.com/watch?v=eCOaBHfA66s
  Leprechaun craft out of household items.
  http://www.youtube.com/watch?v=Kr7lP3iduC4
  Clover keychain made of clay.
  http://www.youtube.com/watch?v=CP5ZeZhI9tQ
  Leprechaun wall hanging craft.
  Create a leprechaun related picture (rainbow, leprechaun, pot of gold, fairies, etc.) using torn construction paper and a glue stick. (similar to the picture shown)

Units 4 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

*Print on **yellow** paper.*

Family Fun – Problem Cards (1 of 2)

A. Kayla ate 2.75 slices of pizza at lunch. Carlos ate $3\frac{1}{2}$ slices. Total slices of pizza eaten?	**B**. My mom's recipe calls for $1\frac{1}{8}$ cups of oats, but a recipe online calls for 1.75 cups. What is the measurement difference between the oats in the recipes?	**C**. $405,258,013.79 + $18,036,906.35
D. 9074.018 - 6939.57 = ?	**E**. Jerry had $38,942.37 in his savings account. After putting a down payment on a new car he had $31,542.37. How much was his down payment?	**F**. A concrete mixture has 37.5% gravel aggregate, 35% sand, 17.5% cement, and water. What percent of the mixture is water?
G. There is a 12.5% hotel tax in Florida. If the room cost was $388.00, how much tax should be charged?	**H**. A 33% late fee is added to your bill if not paid on time. Dora missed her payment of $99.00. How much is her late fee?	**I**. Kayla deposited $2500 into a savings account for her son. It will earn 15% interest in one year if untouched. How much will she earn that year?

Unidad 4, Lección 3 – DIVERSIÓN FAMILIAR

Una por estudiante por hogar

Una por pareja de compañeros en clase

*Imprimir en papel **amarillo**.*

Diversión familiar – Cartas de problemas (1 de 2)

A. Kayla comió 2.75 porciones de pizza en el almuerzo. Carlos comió $3\frac{1}{2}$ porciones. ¿Cuál es el total de porciones de pizza que se comieron?	**B**. Para la receta de mi mamá se necesitan $1\frac{1}{8}$ tazas de avena, pero para una receta en línea se necesitan 1.75 tazas. ¿Cuál es la diferencia de medición entre la avena en	**C**. $405,258,013.79 + $18,036,906.35
D. 9074.018 - 6939.57 = ?	**E**. Jerry tenía $38,942.37 en su cuenta de ahorros. Luego de realizar un pago por un nuevo auto, tenía $31,542.37. ¿De cuánto fue este pago?	**F**. Una mezcla de concreto tiene un 37.5% de agregado de grava, un 35% de arena, un 17.5% de cemento y agua. ¿Qué porcentaje de la mezcla
G. Hay un impuesto de hotel de 12.5% en Florida. Si el costo de la habitación fue de $388.00, ¿cuánto se debe cobrar de impuestos?	**H**. Se agrega una tarifa por atraso del 33% si la factura no se paga a tiempo. Dora no realizó su pago de $99.00. ¿De cuánto es su tarifa por	**I**. Kayla depositó $2500 en una cuenta de ahorros para su hijo. Ganará 15% de interés en un año si no se toca. ¿Cuánto ganará en ese año?

Units 4 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

*Print on **yellow** paper.*

Family Fun – Problem Cards (2 of 2)

J.
Paul's credit card charged him 20% interest each month on purchases. If he charged $198.20, how much interest would be added?

K.
Justin left a 25% tip on his food bill of $48.80. How much tip did he leave?

L.
Jill left a $10 tip on a bill that was $40? What percent tip did she leave?

M. Determine if this statement is true.

$$\frac{9 \text{ green}}{10 \text{ blue}} = \frac{18 \text{ blue}}{20 \text{ green}}$$

N. Determine if this statement is true.

$$\frac{\$5}{3 \text{ bags}} = \frac{\$30}{18 \text{ bags}}$$

O. Based on the ratio given, determine how many students fit on one bus.

480 students : 8 buses

P.
Eiko hit 20 notes out of 22 on her sheet music. At this rate, how many notes will she hit out of 33?

Q.

$$\frac{3}{4} + \frac{4}{6} = ???$$

R.

$$15\frac{7}{8} - 11\frac{3}{4} = ???$$

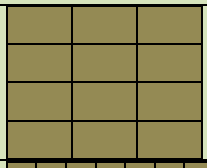
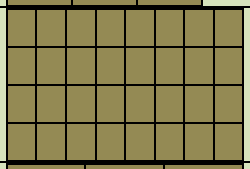
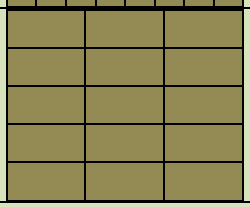
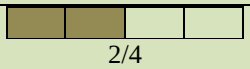
Units 4 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

*Print on **yellow** paper.*

Family Fun – Problem Cards (2 of 2)

J. La tarjeta de crédito de Paul le cobró un 20% de interés cada mes sobre sus compras. Si gastó $198.20, ¿cuánto interés se agregará?	**K**. Justin dejó una propina de 25% en su cuenta de restaurante de $48.80. ¿Cuánta propina dejó?	**L**. Jill dejó una propina de $10 de un factura que era de $40. ¿Qué porcentaje de propina dejó?
M. Determina si esta afirmación es correcta. $\frac{9 \text{ green}}{10 \text{ blue}} = \frac{18 \text{ blue}}{20 \text{ green}}$	**N**. Determina si esta afirmación es correcta. $\frac{\$5}{3 \text{ bags}} = \frac{\$30}{18 \text{ bags}}$	**O**. En base a la relación dada, determina cuántos estudiantes caben en un autobús. 480 estudiantes : 8 autobuses
P. Eiko tocó 20 notas de las 22 de su hoja de música. A este ritmo, ¿cuántas notas tocará de 33?	**Q.** $\frac{3}{4} + \frac{4}{6} = ???$	**R.** $15\frac{7}{8} - 11\frac{3}{4} = ???$

BLM All-School Unit 4, Lesson 3 **Family Fun Game Answer Key**

Problem Letter	Kinder	1-2	3-4	5-6	7-8
A	11 seeds	23	3	$6\frac{1}{4}$ or 6.25	short = 6 long = 8
B	4 seeds	23	9	$\frac{5}{8}$ or 0.625 cups	6
C	4 seeds	39	42	$423,294,920.10	1
D	5 seeds	4	6 seedlings	2134.448	3
E	10 seeds	17	8 bundles	$7400 down	(x3)
F	3 seeds	13	50 bundles	10% water	(x $\frac{1}{3}$)
G	(see special instructions)	14		$48.50 tax	(x $\frac{1}{2}$)
H	(see special instructions)	68		$33 late fee	(x3)
I	2 equal parts	23		$375 earned	(x5)
J	Nickel	Divided into four equal parts	3.21	$39.64	(x3)
K	Dime	Parts are equal	6 x 7 = 42 7 x 6 = 42 42 ÷7 = 6 42 ÷ 6 = 7	$12.20 tip	(x5)
L	Quarter	5	xx xx xx xx xx xx xx xx xx	25% tip	(x5)
M	Penny	4 + 3 = 7	Eleven and seven tenths	no. labels flipped	15
N	Bottom line	12 – 2 = 10	 2/4  4/8	yes. scale factor of (x6)	no – # of shirts varies from each closet
O	Top line	5 wild things	0.7	60 students:1 bus	yes – 2 wheels on each bicycle
P	11	4	Between 0.25 and 0.5	30 notes hit	no – no scale factor

Q	8	4 and 6 are compatible	Line closest to 1	$\frac{17}{12}$ or $1\frac{5}{12}$	yes – scale factor (x20)
R	13 beans 13	8 + 5 = 13 5 + 8 = 13 13 – 8 = 5 13 – 5 = 8	Line in the middle	$4\frac{1}{8}$	yes – scale factor (x10)

Generic Family Fun Game Board

Materials Generic to All Units:

- Game Markers
- Game Cards for your Level
- Answer Key for your Level
- Game Movement Cards (white)
- Unit-specific Materials List

Playing the Game

1. Begin in one of the corner shapes. There may be more than one player in each starting shape. Remember where you started.
2. On your turn, draw one of your level game cards and work the problem.
3. One of the other players uses the Answer Key to check your answer. If correct, draw a movement card and move the given places
   - Forward movement in a clockwise direction.
   - Back movement in a counter clockwise direction.

   If incorrect, do not move.
4. Game is over when the first person runs the entire track, ending back on the starting shape.

Tablero de juego

Materiales genéricos para todas las unidades:

- Fichas para jugar
- Tarjetas del juego para su nivel
- Clave de respuestas para su nivel
- Tarjetas de movimiento del juego (blancas)
- Lista de materiales específicos de la unidad

Cómo se juega

1. Empiece en una de las esquinas. Puede haber más de
1 jugador en cada figura de inicio.
2. Cuando sea su turno, saque una de las tarjetas de
juego de su nivel y resuelva el problema.
3. Uno de los otros jugadores usa la clave de respuestas
para ver si su respuesta es correcta. Si es correcta, saque una tarjeta de movimiento y mueva su ficha como lo indica la tarjeta.
   - Movimiento hacia adelante en el sentido de las manecillas del reloj.
   - Movimiento hacia atrás en el sentido contrario a las manecillas del reloj.

   Si es incorrecta, no se mueve.
4. El juego se acaba cuando la primera persona recorre
toda la pista y termina en la figura de inicio.

BLM [ ] **Follow-up Lesson 3 Family Fun Game Movement Cards** 

Printed in White – 1 set for the TV Lesson Demo. 1 set per partners for class; 1 set per student for home.

Move forward 1 space	**Move forward 1 space**	**Move forward 1 space**
Move forward 1 space	**Move forward 1 space**	**Move forward 1 space**
Move forward 2 spaces	**Move forward 2 spaces**	**Move forward 2 spaces**
Move back 1 space	**Move back 1 space**	**Move back 1 space**
Move forward 3 spaces	**Move forward 2 spaces**	**Move forward 3 spaces**

FAMILY FUN

One per student for home
One per partner pair in class

*Print on **white** paper.*

Family Fun – Movement Cards

Avanza un espacio	**Avanza un espacio**	**Avanza un espacio**
Avanza un espacio	**Avanza un espacio**	**Avanza un espacio**
Avanza 2 espacios	**Avanza 2 espacios**	**Avanza 2 espacios**
Retrocede 1 espacio	**Retrocede 1 espacio**	**Retrocede 1 espacio**
Avanza 3 espacios	**Avanza 3 espacios**	**Avanza 3 espacios**

Units 4 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

Special 5th – 6th Game Instructions

Materials:

- Family Fun Generic Game Board
- Family Fun Movement Cards
- Unit 4 Family Fun Problem Cards for grades 5-6 (yellow)
- Family Fun Answer Key for Unit 4 (all grade bands)
- Unit 4 Family Fun Special 5th – 6th Game Instructions

Solution Expectations

Problems A – B
This problem set is asking students to convert between decimals and/or fractions to solve. They can choose whichever one they are more comfortable with.

Problems C – F
This problem set covers the addition and subtraction of decimals. Students shouldn't have a tough time solving these. The main concern is to make sure place value spots are lined up correctly. Some students line up the decimals, which lines up place value.

*F appears to be a percent concept, but it is not. Students treat the percents as they would any other decimal situation. Solution: 37.5 gravel + 35 sand + 17.5 cement = 90.
100% total mixture - 90% rock and cement materials = 10%. water = 10% of the mixture.

Problems G – L
This problem set deals with percents (tax, interest, and tip). All are solved in the same fashion. Students are encouraged to find 10% and work from there.

*H is a general percent problem situation. It does not specifically involve tax, interest, or tip. Solution strategies remain the same, however.

Problems M – P
This problem set covers equivalent ratios. Students are asked to determine if ratios are equivalent/proportional, and to make predictions based off of ratios.

Problems Q – R
This problem set covers adding and subtracting with unlike denominators. Students must first find a common denominator. They may use the multiplication chart provided to them in the previous unit.

Instrucciones especiales de juego para 5.º – 6.º

Materiales:

- Tablero de juego genérico de Diversión Familiar
- Cartas de movimiento de Diversión Familiar
- Cartas de problemas de Diversión Familiar de la Unidad 4 para grados 5-6 (amarillo)
- Guía de respuestas de Diversión Familiar para la Unidad 4 (todos los grados)
- Instrucciones especiales de juego de la Unidad 4 de Diversión Familiar para 5.º – 6.º

Expectativas de solución

Problemas A – B

Este conjunto de problemas pide a los estudiantes que conviertan entre decimales o fracciones para resolverlos. Ellos pueden decidir con cuáles se sienten más cómodos.

Problemas C – F

Este conjunto de problemas cubre la suma y la resta de decimales. Los estudiantes no deben tener problemas para resolverlos. La principal preocupación es asegurarse de que los espacios de magnitudes estén alineados correctamente. Algunos estudiantes alinean los puntos decimales, con lo que alinean los espacios de magnitud.

*F aparenta ser un concepto de porcentaje, pero no lo es. Los estudiantes tratan los porcentajes como lo harían con cualquier otra situación decimal. Solución: 37.5 grava + 35 arena + 17.5 cemento = 90.

100% mezcla total - 90% materiales de piedra y cemento = 10%. agua = 10% de la mezcla.

Problemas G – L

Este conjunto de problemas utiliza porcentajes (impuestos, interés y propinas). Todos se resuelven del mismo modo. Se anima a los estudiantes a encontrar el 10% y continuar desde ahí.

*H es una situación de problema de porcentaje general. Específicamente no utiliza impuestos, intereses ni propinas. Sin embargo, las estrategias de solución son las mismas.

Problemas M – P

Este conjunto de problemas utiliza relaciones equivalentes. Se pide a los estudiantes que determinen si las relaciones son equivalentes/proporcionales, y que hagan predicciones basadas en las relaciones.

Problemas Q – R

Este conjunto de problemas cubre sumas y restas con denominadores diferentes. Los estudiantes primero deben encontrar un común denominador. Pueden usar la tabla de multiplicar que se les proporciona en la unidad anterior.

Unit 4 – *The Clever Leprechaun* retold by Batt Burns

Math Matters 2014 – In-Home Instruction

Math Objectives

TV Lesson 1

- Add and subtract positive rational numbers fluently. (fourths and halves)

TV Lesson 3

- Add and subtract positive rational numbers fluently. (tenths)

Differentiate

TV Lesson 1 – students solve problem situations that involve benchmark fractions and decimals of one-fourth, half, and three-fourths.

TV Lesson 3 – students solve problem situations that involve benchmark fractions and decimals in the tenths.

Snack Fraction Notice

All snack fractions are common throughout the grade bands. All grade bands have daily snack fraction activities provided. All snack fractions for a unit in a specific grade band will practice the same set of skills.

Materials

TV Lesson 1

- **BLM** Equivalency Chart (Lesson 1 only)
- **BLM** The Clever Halves and Fourths

TV Lesson 3

- **BLM** Equivalency Chart from Lesson 1 (Lesson 3 only)
- **BLM** The Clever Tenths (1 of 2)
- **BLM** The Clever Tenths (2 of 2)

Family Fun

- Family Fun Generic Game Board
- Family Fun Movement cards
- Unit 4 Family Fun-Problem Cards
- Family Fun Answer Key from Unit 4 (all grade bands)
- Unit 4 Family Fun Special 5^{th} – 6^{th} Game Instructions
- game markers

Snack Fractions (Lesson 2)

- balance (no weights necessary)
- 2 100-calorie snack packs (heaviest weight possible)
- 2 paper dessert plates
- 2 paper towels

All items listed above per partner pair

- **BLM** 100-Calorie Snack Packs-Snack Fractions
- **BLM** 100-Calorie Snack Packs-Snack Fractions Teacher Guide

QUESTIONING
As a result of this lesson, your students should be able to respond to the following:

- How can benchmark fractions and decimals help when solving problems?
- Why are certain fractions and decimals considered benchmarks?
- How can you determine when to convert all quantities to either fractions or decimals in a problem situation where both are mixed?
- How can you tell the difference between an area model and a set model?
- Why is it important to know the difference between an area model and a set model?
- What are some real world examples of linear models, such as a number line?

Math Vocabulary
fraction, 4 representations of a fraction, decimal, benchmark, equivalent

CGI Problem

- Lesson 1 – Part-Part-Whole (5^{th} assessment item 4)
- Lesson 2 – Compare Referent Unknown (5^{th} assessment item 5)
- Lesson 3 – Price Partitive Division (6^{th} assessment item 6)

Journal Writing
Why is the unit of measure (feet, hours, pounds, etc.) important when solving problems involving fractions and decimals?

Family Fun
A generic game board is being used in all grade levels, differentiated by game cards specific to the grade level.

Snack Fractions
Students divide their snack into halves and fourths, combine fractions, and find equivalent decimals and percents.

Assessment
As a result of experiencing the activities in this unit, students will be introduced to and practice skills for items:
5^{th} – all items
6^{th} – all items

Grades 5-6 Overview

Unit 5, Lesson 1 *A Foot in the Mouth* selected by Paul B. Janeczko

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine 30 – 45 minutes	Solve problems using a measurement tool and calculating measurements. Model and solve multistep word problems. Solve problems involving fractions, ratios, and proportions. Compose and decompose numbers.	Speak to partners, teacher, and class using vocabulary. Discuss problem solving process and strategies.	**Essential:** • Measurement Lab • Solve It! Problems • Fraction Action • *X* Marks the Spot • CGI **Optional:** • Target Number 10 • Money Matters	• 1 gallon of water • bowl of table salt • hydrometer • 1 tablespoon • scissors to cut the top of gallon jug • large spoon to mix water and salt solution	• **BLM** Salt Water Fishies-Measurement Lab Record Sheet • **BLM** Salt Water Fishies-Measurement Lab Record Sheet Teacher Guide • **BLM** Measurement Lab Teacher Instruction Page • **BLM** Solve It! Problem 1 • **BLM** Fraction Action and *X* Marks the Spot • **BLM** Lessons 1-3 CGI *A Foot In the Mouth*
Classroom Lesson 1 hr – 1.5 hrs	Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.	Make inferences and draw conclusions about the structure and elements of poetry and provide evidence from text to support understanding. Analyze how poets use sound effects to reinforce meaning. Listen attentively to speakers, ask relevant questions, and make pertinent comments. Write poems using poetic techniques, figurative language, and graphic elements.	**Vocabulary** **Literature** *A Foot in the Mouth* selected by Paul B. Janeczko selection *Fishes* by Georgia Heard p.33 selection *Home Poem or, the Sad Dog Song* by J. Patrick Lewis p.35 **Transition to Math** Students play Fractional Fortitude from Unit 2 Lesson 1.	• set of dominoes • 1 coin • scratch paper • 12x12 multiplication chart *All items listed above per partner pair*	• **BLM** Poetry Vocabulary • **BLM** Fractional Fortitude Game Directions • **BLM** Fractional Fortitude Record Sheet

TV Lesson 30 minutes	Add and subtract positive rational numbers fluently. Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Students review decimal concepts through addition and subtraction situations.		• **BLM** *Otter* Take Care of Your Aquarium!
Follow-up Lesson 30 minutess – 1 hour *(including Snack Fractions)*	Add and subtract positive rational numbers fluently.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Practice and Application** Students will play the game Money Mayhem from Unit 1 Lesson 1.	• 6 deca-dice (10-sided numbered 0-9) • 1 coin • set of digit cards (if dice are not available) • scratch paper *All items listed above per partner pair.*	• **BLM** Money Mayhem Game Directions • **BLM** Money Mayhem Record Sheet
Snack Fractions	Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents. Convert between fractions, decimals, and percents. Estimate to find solutions to problems involving fractions, decimals, and percents.	Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.	Students will work in pairs and explore fraction and decimal concepts through fair-sharing a Laughing Cow Cheese wedges..	• 3 Laughing Cow Cheese wedges • 2 paper dessert plates • 2 paper towels • 2 plastic knives *All items listed above per partner pair*	• **BLM** Laughing Cow Cheese-Snack Fractions • **BLM** Laughing Cow Cheese-Snack Fractions Teacher Guide

Grades 5-6 Overview

Unit 5, Lesson 2 *A Foot in the Mouth* selected by Paul B. Janeczko

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine 30 – 45 minutes	Solve problems using a measurement tool and calculating measurements. Model and solve multistep word problems. Solve problems involving fractions, ratios, and proportions. Solve for a variable. Compose and decompose numbers.	Speak to partners, teacher, and class using vocabulary. Discuss problem solving process and strategies.	**Essential:** • Measurement Lab • Solve It! Problems • Fraction Action • *X* Marks the Spot • CGI **Optional:** • Target Number 30 • Money Matters	• 3 one-quart mason jars (or other container with lid) • 1 cup table salt • 3 eggs • 1/4 dry measuring cup • 1 gallon of water	• **BLM** Walk the Plank!-Measurement Lab Record Sheet • **BLM** Walk the Plank! - Measurement Lab Record Sheet Teacher Guide • **BLM** Measurement Lab Teacher Instruction Page • **BLM** Solve It! Problem 2 • **BLM** Fraction Action and *X* Marks the Spot • **BLM** Lessons 1-3 CGI *A Foot In the Mouth*
Classroom Lesson 1 hr – 1.5 hrs	Use models to relate decimals to fractions. Generate equivalent forms of rational numbers including whole numbers, fractions, and decimals.	Make inferences and draw conclusions about the structure and elements of poetry and provide evidence from text to support understanding. Analyze how poets use sound effects to reinforce meaning. Listen attentively to speakers, ask relevant questions, and make pertinent comments. Write poems using poetic techniques, figurative language, and graphic elements.	**Literature** *A Foot in the Mouth* selected by Paul B. Janeczko selection *I Am Standing - Girl on Land, Boy at Sea* by April Halprin Wayland and Bruce Balan p.26-27 selection *Old Hank* by anonymous p.40 **Transition to Math** Students will play Fraction-Decimal Memory Game A from Unit 4 Lesson 1.		• **BLM** Fraction-Decimal Memory Game A Directions • Fraction-Decimal Memory Cards A (3 pages)

TV Lesson 30 minutrs	Give examples of ratios as multiplicative comparisons of two quantities describing the same attribute. Give examples of rates as the comparison by division of two quantities having different attributes, including rates as quotients.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Students review ratio and proportion situations.		• **BLM** Me Hearty Vegetables
Follow-up Lesson 30 minutes – 1 hour *(including Snack Fractions)*	Give examples of ratios as multiplicative comparisons of two quantities describing the same attribute. Give examples of rates as the comparison by division of two quantities having different attributes, including rates as quotients.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Practice and Application** Students will play the game Ridiculous Ratios from Unit 3 Lesson 1.	• set of dominoes • scratch paper • 12x12 multiplication chart (optional) *All items listed above per partner pair.*	• **BLM** Ridiculous Ratios Game Directions • **BLM** Ridiculous Ratios Record Sheet
Snack Fractions	Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents. Convert between fractions, decimals, and percents. Estimate to find solutions to problems involving fractions, decimals, and percents.	Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.	Students will work in pairs and explore fraction and decimal concepts through fair-sharing Crackers and Nutella with Strawberries.	• 4 graham crackers (1 sheet) • 2 TBS Nutella ***Allergy Warning – please substitute a different spread for the entire class if nut allergies are present.*** • 3 large strawberries • 2 paper dessert plates • 2 paper towels • 2 plastic knives *All items listed above per partner pair*	• **BLM** Crackers and Nutella-Snack Fractions • **BLM** Crackers and Nutella-Snack Fractions Teacher Guide

Grades 5-6 Overview

Unit 5, Lesson 3 *A Foot in the Mouth* selected by Paul B. Janeczko

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine 30 – 45 minutes	Solve problems using a measurement tool and calculating measurements. Model and solve multistep word problems. Solve problems involving fractions, ratios, and proportions. Solve for a variable. Compose and decompose numbers.	Speak to partners, teacher, and class using vocabulary. Discuss problem solving process and strategies.	**Essential:** • Measurement Lab • *X* Marks the Spot • CGI **Optional:** • Target Number 60 • Money Matters	• pencil (per student) • scissors (per student) • tape measure (Pattern 2 pairs only) • yard or meter stick (per pair) • 22" x 28" colored poster board (per pair) • masking or duct tape (per team) • 1/4" x 12" dowel rod (per team)	• **BLM** Ghost Ship Teacher Instruction Page • **BLM** Ghost Ship-Measurement Lab Record Sheet • **BLM** Ghost Ship Pattern 1, 2, and 3 Instruction Page • **BLM** Ghost Ship Pattern 1, 2, and 3 Visual Guide • **BLM** Ghost Ship Teacher Guide • **BLM** Ghost Ship Assembly Instructions • **BLM** Fraction Action and *X* Marks the Spot • **BLM** Lessons 1-3 CGI *A Foot In the Mouth*
Classroom Lesson **1 hr – 1.5 hrs**	Use models to relate decimals to fractions. Generate equivalent forms of rational numbers including whole numbers, fractions, and decimals.	Make inferences and draw conclusions about the structure and elements of poetry and provide evidence from text to support understanding. Analyze how poets use sound effects to reinforce meaning. Listen attentively to speakers, ask relevant questions, and make	**Literature Selection** *A Foot in the Mouth* selected by Paul B. Janeczko selection *Where Lizzie Lived* by Rebecca Kai Dotlich p.57 **Transition to Math** Students will play Fraction-Decimal Memory Game B from Unit 4 Lesson 2.		• **BLM** Fraction-Decimal Memory Game B Directions • Fraction-Decimal Memory Cards B (3 pages)

		pertinent comments. Write poems using poetic techniques, figurative language, and graphic elements.			
TV Lesson 30 minutes	Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models.	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Students review general percent situations.		• **BLM** Ghostly Encounters
Follow-up Lesson 30 minutes – 1 hour *(including Snack Fractions)*	Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations. Use addition and subtraction to solve problems involving whole numbers and decimals. Add and subtract positive rational numbers fluently. Use ratios to describe proportional situations. Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models. Represent ratios and	Discuss problem solving strategies with peers. Write out solutions for solving problems. Justify their thinking and strategies.	**Practice and Application** Students learn and play the Family Fun Game.	• Family Fun Generic Game Board • Family Fun Movement Cards • Unit 4 Family Fun Problem Cards for grades 5-6 (yellow) • Family Fun Answer Key for Unit 4 (all grade bands) • Unit 4 Family Fun Special 5^{th} – 6^{th} Game Instructions • game markers	

	percents with concrete models, fractions, and decimals. Use ratios to make predictions in proportional situations.				
Snack Fractions	Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents. Convert between fractions, decimals, and percents. Estimate to find solutions to problems involving fractions, decimals, and percents.	Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.	Students will work in pairs and explore fraction and decimal concepts through fair-sharing a bagel and cream cheese.	• 1 large bagel • 4 TBS cream cheese • 2 paper dessert plates • 2 paper towels • 2 plastic knives *All items listed above per partner pair*	• **BLM** Bagels and Cream Cheese-Snack Fractions - 1 per student • **BLM** Bagels and Cream Cheese-Snack Fractions Teacher Guide

Project SMART/Math MATTERS 2014

Grade Level: 5-6	Unit 5 / Lessons 1 – 2 – 3

Daily Routine Math Objectives:
Solve problems using a measurement tool and calculating measurements.
Model and solve multistep word problems.
Solve problems involving fractions, ratios, and proportions.
Solve for a variable.
Compose and decompose numbers.

Daily Routine Language Objectives:
Speak to partners, teacher, and class using vocabulary.
Discuss problem solving process and strategies.

Unit Math Objectives:
Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.
Add and subtract positive rational numbers fluently.
Give examples of ratios as multiplicative comparisons of two quantities describing the same attribute
Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models.
Represent ratios and prevents with concrete models, fractions, and decimals.
Use equivalent fractions, decimals, and percents to show equal parts of the same whole.
Give examples of rates as the comparison by division of two quantities having different attributes, including rates as quotients.

Unit Language Objectives:
Make inferences and draw conclusions about the structure and elements of poetry and provide evidence from text to support understanding.
Analyze how poets use sound effects to reinforce meaning.
Listen attentively to speakers, ask relevant questions, and make pertinent comments.
Write poems using poetic techniques, figurative language, and graphic elements.

Technology Objectives:
Use research skills and electronic communication, with appropriate supervision, to create new knowledge.

Vocabulary
Math: fraction, ratio, decimal, percent, equivalent, scale factor, constant of proportionality, benchmark
Language: metaphor, rhyme, rhythm, repetition, verse, alliteration, imagery, stanza, mood, anthology

Resources/Literacy Links
http://www.paulbjaneczko.com/bio.htm
www.liveaquaria.com

This portion of the curriculum is NOT required, but should be used to supplement and enrich the Unit's activities.	**Enrichment Suggestions** Unit 5 ***A Foot in the Mouth*** **Math "Float" (Virtual)** Use an online website such as Google Earth to: 1. Track your travels in a pirate ship from one popular beach destination to the other. Meanwhile, keeping track of the mileage and calculating a running total in miles as you travel from one place to the next. 2. (Same as #1) but track well known routes sailed by The Flying Dutchman. Create a pirate adventure to support the routes you sailed. Come together as a class and share your travels. **Technology Connection** http://www.google.com/earth/ Google Earth **More Curriculum Connection Ideas off the Web** • **Social Studies:** http://en.wikipedia.org/wiki/Blackbeard History and information about Blackbeard the pirate. http://en.wikipedia.org/wiki/Flying_Dutchman History of the Flying Dutchman – most famous ghost ship • **Science**: http://www.weather.com/travel/worlds-most-amazing-coral-reefs-20130307 The Weather Channel: The World's 10 Most Amazing Coral Reefs • **Art:** http://www.firstpalette.com/tool_box/art_recipes/Salt_Dough/Salt_Dough.html Salt Water Dough http://www.funology.com/salt-water-picture/ Funology – Salt Water Picture http://www.oneperfectdayblog.net/2012/04/27/kids-art-raised-salt-painting/ One Perfect Day – Raised Salt Painting

Unit 5: Poetry Project

Defined:
Students write their own poems and perform them in a "coffee house" venue.

Materials
Tables and chairs
Hot chocolate and pound cake
Decorative mugs and paper plates, napkins
Beret for reading poet
Interlude guitar music

Objectives

- Write poems.
- Each student selects one of their original poems to present.
- Present the reading of the poem to the large group.

Procedures:
Prior to Poetry Reading event, students should write their own poems, either individually or as a class. The poems should be read in class to the class as practice. Class poems should be read chorally so that all of the class members take part in the presentation.

Set up the event area as a coffee house or cafe, a raised stage area up front if possible. Serve hot chocolate or other drink in cups or mugs.

Assign an MC to introduce the poets and a sound person to play appropriate guitar music CD between performances.

Poets come up to the stage one at a time from the audience when introduced to read their original work. The beret is an interesting touch which takes the individual out of the reading almost as a mask would do. If the poem is a class poem, students should read responsively or as choral reading.

You might want to serve small sandwiches or pound cake with fruit after the reading. What a super parent event this would be!

Online resources:

- http://www.alexslemonade.org/files/down/coffee.pdf This might be a possible fund raiser for your students' giving in financial responsibility, making the event a poetry reading instead of a talent show or lemonade stand.
- http://www.ilovelibraries.org/articles/featuredstories/poeminyourpocket Coffeehouse-style reading format
- http://www.scholastic.com/teachers/top-teaching/2010/05/poetry-cafe another Coffeehouse-style reading format

Project Title: _____

Student Name: _____

Date: _____ Teacher: _____

Math MATTERS Project Rubric

	1 point	2 points	3 points	4 points	Score
Amount of Project Completed	Little effort made, most items are unaddressed or incomplete	Some parts of the project were addressed and complete	Most of the project parts were addressed and complete, a few may be missing	All parts of the project were addressed and complete	
Quality of Work	Could not read project, project poorly organized	Project was partially organized, many parts were confusing or unrelated	Project was mostly organized, a few parts may be confusing or unrelated	Project highly organized and all parts clearly related to the topic	
Use of Time and Effort	Did not use time effectively	Used some time effectively, but was often off task	Used most time effectively, occasionally off task	Student used all available time to the fullest	
Presentation	Student could not explain own project	Student needed to be prompted to explain own project	Student explained project with little prompting	Student easily explained the project and could answer questions	
				Total	

A total score of 12 or more points is needed to consider the project complete.

Notes:

Rubric is an adaptation of Rcampus Math Project Rubric: Fraction Word Problems
http://www.rcampus.com/rubricshowc.cfm?code=F945W8&sp=true&

Materials
- **BLM** Salt Water Fishies-Measurement Lab Record Sheet
- **BLM** Salt Water Fishies-Measurement Lab Record Sheet Teacher Guide
- **BLM** Measurement Lab Teacher Instruction Page
- **BLM** Solve It! Problem 1
- **BLM** Fraction Action and *X* Marks the Spot
- **BLM** Lessons 1-3 CGI
A Foot In the Mouth

Math Objectives
- Solve problems using a measurement tool and calculating measurements.
- Model and solve multistep word problems.
- Solve problems involving fractions, ratios, and proportions.
- Compose and decompose numbers.

Language Objectives
- Speak to partners, teacher, and class using vocabulary.
- Discuss problem solving process and strategies.

Math Vocabulary
fraction
ratio
decimal
percent
equivalent
scale factor
constant of proportionality
benchmark

Literature Vocabulary
metaphor
rhyme
rhythm
repetition
verse
alliteration
imagery
stanza
mood
anthology

Unit 5, Lesson 1 — Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post-assessment. They are not optional.

ESSENTIAL

Measurement Lab
- **Lesson 1 – Salt Water Fishies *(6th assessment item 1,5,6)***
- Lesson 2 – Walk the Plank! (6th assessment item 1,5,6)
- Lesson 3 – Ghost Ship (5th assessment item 1,2,3,4,5,6)

Lesson 1 Materials
- 1 gallon of water
- bowl of table salt
- hydrometer
- 1 tablespoon
- scissors to cut the top of gallon jug
- large spoon to mix water and salt solution

Lesson 1 Student Groups
Students will work in groups to measure the salinity of water, and then use the measurements to determine how much salt to mix into a 100-gallon fish tank. BLM Measurement Lab Teacher Instruction Page has been provided for details of the activity.

Solve It! Multi-step problem solving
- **Lesson 1 - triads, 3-step (5th asmnt item 4, 5)**
- Lesson 2 - triads, 3-step (6th asmnt item 4)
- Lesson 3 - omit

Fraction Action
- **Lesson 1 – *(5th assessment item 1,2,3)***
- Lesson 2 – (5th assessment item 6)
- Lesson 3 – omit

***X* Marks the Spot**
- **Lesson 1 – *(6th assessment item 8)***
- Lesson 2 – (6th assessment item 7)
- Lesson 3 – (6th assessment item 4)

CGI
- **Lesson 1 – Part-Part-Whole (5th assessment item 4)**
- Lesson 2 – Compare Referent Unknown (5th assessment item 5)
- Lesson 3 – Price Partitive Division (6th assessment item 6)

Unit 5, Lesson 1 — Grades 5-6

Assessed TEKS for this Unit 5th – 5.3H, 5.3K 6th – 6.4C, 6.4D, 6.4E, 6.5B, 6.5C **ELPS** (*English Language Proficiency Standard*) 2D, 2E, 2H, 3B, 3D, 3H, 4C **CCRS** (*College and Career Readiness Standards)* CROSS-CURRICULAR I.B.1., I.C.1., I.C.2., I.C.3., II.A.4. ELA II.A.2., II.A.3., II.B.1., III.B.1., MATH I.B.1., II.A.1., IV.A.1., IV.B.1., VIII.A.3., VIII.A. 4.	**Daily Routine -** continued **----------** **The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.** **----------** **OPTIONAL** **Target Number** • **Lesson 1 – *Target Number 10*** • Lesson 2 – Target Number 30 • Lesson 3 – Target Number 60 **Money Matters** (*If you have a full program and wish to use this optional activity, you will find BLMs and Explanations on MAS Space.)*

Unit 5 CGI Problems for *A Foot in the Mouth: Poems to Speak, Sing, and Shout*

	Multiplication	Measurement Division	Partitive Division
Grouping and Partitioning	A child has 20 baby teeth. If there are 17 children in the class that still have all their baby teeth, how many baby teeth would that be?	A lot of teeth have been lost by children in this school. A total of 147 teeth have been lost. If each child averaged a loss of 7 teeth, how many children are in this school?	Most fifth and sixth graders have many permanent teeth. There are 14 students in the fifth grade. If they have a total of 108 permanent teeth, what is the average number of permanent teeth per student?
Rate	Kiki worked at a hot dog stand. She could sell 45 hot dogs in 30 minutes. How many hot dogs could she sell in 3-1/2 hours?	If Kiki sold 18 hot dogs per hour, how many hours would it take her to sell 627 hot dogs?	If Kiki sold 587 hot dogs over a period of 12 hours, how many sold hot dogs did she average per hour?
Price	The price of a package of hot dogs is $2.97. How much will Kiki spend on 3 dozen packages?	Kiki spent $45.36 on hot dog buns. If each package costs $1.08, how many packages did she buy?	Kiki spent $119.60 on hot dogs. She bought 520 hot dogs. How much did she spend per hot dog?
Multiplicative Comparison	Kiki uses 6 times more mustard than catsup on the hot dogs she sells. She uses 48 ounces of catsup a week. How many ounces of mustard does she use?	In a week, Kiki uses 50 pounds of potatoes. She uses 2.5 pounds of catsup. How many times more potatoes than catsup does she use?	Kiki used 125 pounds of onions in a two week period. That's 1-1/2 times more onions than potatoes. How many potatoes did she use?
Fractions	Kiki puts ¼ cup of chopped onions on each hot dog. If she sells 29 hotdogs, how many cups of chopped onions will she need?	An onion yields 2/3 cup when chopped. If Kiki had 7-1/3 cups of chopped onions, how many onions did she chop?	Kiki chopped 12-1/3 cups of onions. She used the onions on 61 hot dogs. How many cups of onions did she use on each hot dog?

Unit 5 CGI Problems for *A Foot in the Mouth: Poems to Speak, Sing, and Shout*

	Multiplicación	División de medición	División partitiva
Agrupamiento y division	Un niño tiene 20 dientes de leche. Si hay 17 niños en la clase que todavía tienen todos sus dientes de leche , ¿cuántos dientes de leche sería?	Los niños de esta escuela han perdido muchos dientes. Se ha perdido un total de 147 dientes. Si cada niño perdió un promedio de 7 dientes , ¿cuántos niños hay en esta escuela?	La mayoría de los estudiantes de quinto y sexto grado ya tienen sus dientes permanentes. Hay 14 estudiantes en el quinto grado. Si tienen un total de 108 dientes permanentes, ¿cuánto es el número promedio de dientes permanentes por estudiannte?
Razón	Kiki trabajó en un puesto de perritos calientes. Podía vender 45 perritos calientes en 30 minutos. ¿Cuántos perritos calientes podría vender en 3-1/2 horas?	Si Kiki vendió 18 perritos calientes por hora, ¿Cuántas horas se necesita para vender 627 perritos calientes?	Si Kiki vendió 587 perritos calientes en 12 hours, ¿cuál es el promedio de perritos calientes que vendió por hora?
Precio	El precio para un paquete de perritos calientes es $2.97. ¿Cuánto gastará Kiki por 3 docenas de paquetes?	Kiki gastó $45.36 en pan para los perritos calientes. Si cada paquete cuesta $1.08, ¿cuántos paquetes compró?	Kiki gastó $119.60 en perritos calientes. Ella compró 520 perritos calientes. ¿Cuánto gastó por perrito caliente?
Comparacion de objetos	Kiki usa 6 veces más mostaza que salsa de tomate para los perritos calientes que vende. Usa 48 onzas de salsa de tomate por semana. ¿Cuántas onzas de mostaza usa?	En una semana, Kiki usa 50 libras de papas. Ella usa 2.5 libras de salsa de tomate. ¿Cuántas veces más papas que salsa de tomate usa?	Kiki usa 125 libras de cebollas en dos semanas. Esto es 1-1/2 veces más cebollas que papas. ¿Cuántas papas usa?
Fracciones	Kiki pone ¼ tazas de cebollas picadas en cada perrito caliente. Si vende 29 perritos calientes, ¿cuántas tazas de cebollas picadas necesita?	Una cebolla rinde 2/3 taza cuando esta picada. Si Kiki tenia 7-1/3 tazas de cebollas picadas, ¿cuántas cebollas cortó?	Kiki cortó 12-1/3 tazas de cebollas. Usó las cebollas para 61 perritos calientes. ¿Cuántas tazas de cebollas usó en cada perrito caliente?

Unit 5 Lesson 1 – Daily Routines – Measurement Lab
One per student

Salt Water Fishies – Measurement Lab Record Sheet

Materials:

- 1 gallon of water
- bowl of table salt
- hydrometer
- 1 tablespoon
- scissors to cut off the top of gallon jug
- large spoon to mix water and salt solution

Task:
Your group must help poem writer, Georgia Heard, calculate the perfect amount of salt to add to her 100-gallon saltwater fish tank.

Important information:

a) The salinity (percent of salt dissolved in the water) should be approximately 3.2% or the fish will not survive.
b) A hydrometer is a tool that measures the salinity of water. When the water is around 3.2% salinity the hydrometer will read 1.025.

Procedure:

1. carefully cut off the top of the 1 gallon jug of water enough that the spoon can fit through to stir
2. start by dissolving 1 TBS of salt into the water
3. measure the salinity with the hydrometer
4. record data in the table provided
5. repeat process and STOP when the hydrometer reads approximately 1.025

TBS	hydrometer reading
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

1. What is the ratio of water to salt? _____ gallon / TBS

2. If 1 cup of salt is equivalent to 16 TBS, about how many cups of salt did you add to the water? _____

3. Use the ratio table to convert your measurements to the much larger 100-gallon saltwater tank.

labels	**known**					**unknown**
cups						**?**
gallons						**100 gal**

Unit 5 Lesson 1 – Daily Routines – Measurement Lab
One per student

Salt Water Fishies – Measurement Lab Record Sheet

Materiales:

- 1 galón de agua
- tazón de sal de mesa
- hidrómetro
- 1 cucharada
- tijeras para cortar la parte superior de la jarra de un galón
- cuchara grande para mezclar la solución de agua y sal

Tarea:
Tu grupo debe ayudar al escritor de poemas, Georgia Heard, a calcular la cantidad perfecta de sal que se debe agregar a su tanque de peces de agua salada de 100 - galones.

Información importante:

c) La salinidad (porcentaje de sal disuelta en el agua) debe ser de aproximadamente 3.2% o los peces no sobrevivirán.
d) Un hidrómetro es una herramienta que mide la salinidad del agua. Cuando el agua tiene una salinidad de alrededor del 3.2%, en el hidrómetro se leerá 1.025.

Procedimiento:

6. recorta con cuidado la parte superior de una jarra de agua de 1 galón lo suficiente para que entre la cuchara para mezclar
7. comienza disolviendo 1 cucharada de sal en el agua
8. mide la salinidad con el hidrómetro
9. registra los datos en la tabla provista
10. repite el proceso y DETENTE cuando en el hidrómetro se lea aproximadamente 1.025

TBS	hidrómetro
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

4. ¿Cuál es la relación de agua a sal? _____ galón / CUCHARADA
5. Si 1 taza de sal es equivalente a 16 CUCHARADAS, ¿aproximadamente cuántas tazas de sal le agregarías al agua? _____

6. Usa la tabla de relaciones para convertir tus mediciones al tanque mucho más grande de agua salada de 100 galones.

etiquetas	**conocidas**					**desconocidas**
tazas						**?**
galones						**100 gal**

Unit 5 Lesson 1 – Daily Routines – Measurement Lab
One per student

Salt Water Fishies – Measurement Lab Record Sheet Teacher Guide

Materials:

- 1 gallon of water
- bowl of table salt
- hydrometer
- 1 tablespoon
- scissors to cut off the top of gallon jug
- large spoon to mix water and salt solution

Task:
Your group must help poem writer, Georgia Heard, calculate the perfect amount of salt to add to her 100-gallon saltwater fish tank.

Important information:

a) The salinity (percent of salt dissolved in the water) should be approximately 3.2% or the fish will not survive.
b) A hydrometer is a tool that measures the salinity of water. When the water is around 3.2% salinity the hydrometer will read 1.025.

Procedure:

11. carefully cut off the top of the 1 gallon jug of water enough that the spoon can fit through to stir
12. start by dissolving 1 TBS of salt into the water
13. measure the salinity with the hydrometer
14. record data in the table provided – readings will vary, the readings in chart are examples.
15. repeat process and STOP when the hydrometer reads approximately 1.025

TBS	hydrometer reading
1	1.000
2	1.004
3	1.008
4	1.011
5	1.016
6	1.019
7	1.022
8	1.025
9	
10	

1. What is the ratio of water to salt? $\frac{\text{1 gallon water}}{\text{8 TBS salt}}$
   Should be around 7-8 TBS.

2. If 1 cup of salt is equivalent to 16 TBS, about how many cups of salt did you add to the water? Estimate to 8 TBS for everyone in class.
   $\frac{1}{2}$ cup of salt

3. Use the ratio table to convert your measurements to the much larger 100-gallon saltwater tank.
   Ratio tables will vary. This is one example.

labels	known	x10	x10			unknown
cups	0.5 cup	5 cups	50 cups	→		50 cups
gallons	1	10 gallons	100 gallons			100 gal

Unit 5 Lesson 1 – Daily Routines - Solve It! Problems (pairs)
One per partner pair

Measurement Lab Teacher Instruction Page

Focus:
Students will gain real life experience using decimals and percents, as well as, utilizing a ratio table to solve the problem.

Science content is NOT the main focus of this activity, although feel free to collaborate with a science teacher to enhance the lesson.

Instructions and Modifications:

1. Picture 1: Materials and top of gallon jug cut off. I used kitchen shears with a sharp point with no problem. You may want to do this for the groups. Students may pour out a little bit of water to allow more room. If hydrometers are hard to come by, you may choose to do this experiment whole group. However, it is recommended to perform the activity in small groups of 3-4.

   MUST be LEVEL tablespoons, NOT heaping tablespoons.

2. Picture 2: Hydrometers can be found in pet stores by the fish tank equipment or online. The one I used was around $5.00 online. Make sure students understand the increments on the hydrometer before starting the experiment. This one measures in increments of 2-thousandths starting at 1.000 to 1.060.

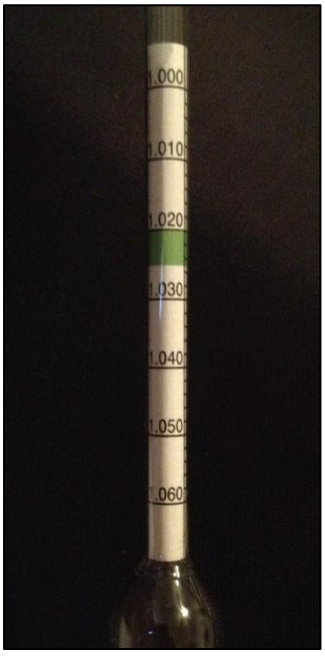
3. Picture 3: Numbers are listed from top to bottom (backwards from a thermometer). The bottom of the green portion shows 1.025.

4. Picture 4: Gently insert the hydrometer into the water. It will float. Students find measurement of salinity by using the actual water level. You can dye the water with food coloring to make reading easier.

Picture 1

Picture 2

Picture 3



Picture 4

Unit 5 Lesson 1 – Daily Routines – Solve It! (triads) **5-6**
1 per partner pair

Problem 1:
Tristan and her partner Denise were recording the amounts of salt they added to water during a science lab at school. They added 25.025 grams to the water for round 1. Then, added 12.5125 grams for round 2. How much salt did they add to the water altogether?

- What is the answer to the question? Show your solution strategy.

Problem Solution (Partner #1) Name:	**Solution Verification** (Partner #2) Name:

Problem 2:
They added 12.5125 grams of salt to the water for round 3. How much salt have they added to the solution altogether?

- What information do you need from Problem 1 to solve Problem 2?
- What is the answer to the question? Show your solution strategy.

Problem Solution (Partner #2) Name:	**Solution Verification** (Partner #3) Name:

Problem 3:
Tristan's calculations show that the total amount of salt was 50.5 grams. Is she correct?

- What information do you need from Problem 1 and 2 to solve Problem 3?
- Be sure to verify the answers to Problem 1 and 2 before solving Problem 3.
- What is the answer to the question? Show your solution strategy.

Problem Solution (Partner #3) Name:	**Solution Verification** (Partner #1) Name:

Unit 5 Lesson 1 – Daily Routines – Solve It! (triads) **5-6**
1 per partner pair

Problem 1:
Tristan y su compañera Denise estaban registrando las cantidades de sal que agregaron al agua en un laboratorio de ciencias en el colegio. Agregaron 25.025 gramos al agua para la ronda 1. Luego, agregaron 12.5125 gramos para la ronda 2. ¿Cuánta sal le agregaron al agua en total?

- ¿Cuál es la respuesta a la pregunta? Muestra tu estrategia de solución.

Solución del problema (#1) Nombre:	**Verificación de la solución (**#2**)** Nombre:

Problem 2:
Agregaron 12.5125 gramos al agua para la ronda 3. ¿Cuánta sal le agregaron la solución en total?

- Qué necesitas del problema 1 para resolver este problema?
- ¿Cuál es la respuesta a la pregunta? Muestra tu estrategia de solución.

Solución del problema (#1) Nombre:	**Verificación de la solución (**#2**)** Nombre:

Problem 3:
Los cálculos de Tristan demuestran que la cantidad total de sal era de 50.5 gramos. ¿Está en lo correcto?

- ¿Qué necesitas de los problemas 1 y dos para resolver este problema?
- Asegúrate de verificar la respuesta del problema 1 y 2 antes de resolver este problema.
- ¿Cuál es la respuesta a la pregunta? Muestra tu estrategia de solución.

Solución del problema (#1) Nombre:	**Verificación de la solución (**#2**)** Nombre:

Unit 5 Lesson 1 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

Dillion flew $3146\frac{1}{2}$ miles for the first part of his trip, drove $218\frac{3}{4}$ miles to the mountain, and then hiked $22\frac{1}{8}$ miles to camp. How many miles has he traveled so far?

X Marks the Spot

Solve for *x*.

15% of \$44.26 = *x*

Unit 5 Lesson 1 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

Dillion voló $3146\frac{1}{2}$ millas para la primera parte del viaje, manejó $218\frac{3}{4}$ millas hasta la montaña y, luego, caminó $22\frac{1}{8}$ millas hasta el campamento. ¿Cuántas millas ha viajado hasta el momento?

X Marca el sitio

Resuelve para *x*.

15% de \$44.26 = *x*

Materials
- **BLM** Poetry Vocabulary
- set of dominoes
- 1 coin
- scratch paper
- 12x12 multiplication chart

All items listed above per partner pair. (game items only)
- **BLM** Fractional Fortitude Game Directions
- **BLM** Fractional Fortitude Record Sheet

Literature Selection
A Foot in the Mouth selected by Paul B. Janeczko
selection *Fishes* by Georgia Heard p.33
selection *Home Poem or, the Sad Dog Song* by J. Patrick Lewis p.35

Math Vocabulary
fraction
ratio
decimal
percent
equivalent
scale factor
constant of proportionality
benchmark

Literature Vocabulary
metaphor
rhyme
rhythm
repetition
verse
alliteration
imagery
stanza
mood
anthology

ELPS (*English Language Proficiency Standard*)
1G, 2B, 2C, 3D, 4C, 4J, 4K

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., II.A.3., II.A.4., II.B.1., II.B.2.
ELA I. B.1., II.A.2., II.A.3., II.A.6., II.A.7., II.B.1., III.A.2

Unit 5, Lesson 1 — Grades 5-6

Classroom Lesson

Every day teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

Math Objectives:
- Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.

Language Objectives:
- Make inferences and draw conclusions about the structure and elements of poetry and provide evidence from text to support understanding.
- Analyze how poets use sound effects to reinforce meaning.
- Listen attentively to speakers, ask relevant questions, and make pertinent comments.
- Write poems using poetic techniques, figurative language, and graphic elements.

BEFORE READING

Building Background – Vocabulary & Literature

Distribute BLM poetry vocabulary.
Say, "We will discover the words for this unit in a different method than the previous four units. The words on our list are not in our readings, but examples of these words are in our readings."
(Anthology is not included on the BLM.)

Say, "Look at the first word on the *BLM Poetry Vocabulary Chart*. This is an example of how we will explore each of our vocabulary words for this unit. Point to the first word 'poetry'."
Ask, "What is the word?" Students respond: The word is 'poetry'. Ask, "How many syllables are in the word poetry?" Students respond: There are three syllables in this word and it sounds like *this (point to the second column)* when I read the word poetry.
Ask, "Have you heard this word before? What does this word mean?" Allow for students to tell the meaning or give an example.

TEACHER NOTE: Guide the definition creation. If students give examples, respond: "that is a great example of poetry, so what I understand you to mean is…"
The definitions provided in the margin of this lesson are meant to be a guide. The class determines a student friendly meaning of the

Technology Option
www.liveaquaria.com
Includes photos and facts about each fish mentioned in the poem.

Definitions:
metaphor (figure of speech) 3 syllables
a connection of two objects not usually connected
i.e. *love is a rose*

rhyme 1 syllable
two or more words which match in the same last sound
i.e. *cat bat*

rhythm 2 syllables (schwa before the /m/)
the beat or cadence of poetry

repetition 4 syllables
using a key word several times throughout a poem

verse (iambic pentameter) 1 syllable
has no rhyme but has rhythm

alliteration 5 syllables
two words in the same line with the same starting sound
i.e. *the price of the previous one*

imagery 4 syllables
pictures drawn in the reader's mind by the words of the poet

stanza 2 syllables
a paragraph in poetry, surrounded above and below by skipped lines

mood 1 syllable
the feeling of the reader of a poem.

definitions. Also note that definitions may be added later after examples are experienced in the poems read.

Say, "In the final column of our chart, we will add the title of the poem in which we find the examples of these. Let's begin with the next word on the list."

Guide the students through discovery of each word on the list in the same manner as above. Allowing students to discuss where they might have heard or read the term before today. This BLM will be used again in another lesson.

Turn to page 10 and 11 in the book and locate the *Introduction* for the book. Read aloud the Introduction or allow student volunteers to read aloud.
Say, "For this unit we will be reading five poems from this book. The book is an anthology collected by Paul Janeczko. What do you think anthology means?"
Allow students to think, share with a partner, and then with class.

Say, "Anthology is a thing, more specifically a book. It's from Greek *anthologia*, from *anthos* 'flower' + *-logia* 'collection' (from *legein* 'gather'). In Greek, the word originally denoted a collection of the "flowers" of verse, i.e., small choice poems or epigrams, by various authors."

Ask, "Why did Paul Janeczko select these poems for the book?"
Direct students to respond with reasons from the *Introduction.*

Visit the website to learn more about the author and why he became an author:
http://www.paulbjaneczko.com/bio.htm

Say, "The poems selected for this lesson are intended for two persons to read. Today we will be reading, "*Fishes"* and "*Home Poem Or, Sad Dog Song"* and determine which elements of poetry the authors utilized in their writing."

DURING READING
Comprehensible Input - Vocabulary & Literature

TEACHER NOTE: For all questions in this lesson, allow the students' responses to be explained to a partner, then to the class. Evidence is provided from the poem as relevant.

Read the title and author's name aloud.

anthology- noun, from Greek *anthologia*, from *anthos* 'flower' + *-logia* 'collection' (from *legein* 'gather'). In Greek, the word originally denoted a collection of the "flowers" of verse, i.e., small choice poems or epigrams, by various authors.
a book or other collection of selected writings by various authors

Teacher Note
Unit 5 is utilized as a review of all skills that will be assessed for both 5th and 6th grade. Teachers are to differentiate and modify lessons to meet the needs of their individual students to ensure they are prepared for the post-assessment.

Classroom Lesson - continued

Ask, "Look at this poem; what do you notice about the structure?"

Ask, "How do you think the author intends on the readers to read this poem?"

Select six students to read. Guide students in reading the poem aloud to the class in alternating form. One reader for each name of the fish for the first six lines, Then, three read together, as other three respond.

Ask, "Who is speaking in the poem? What is the purpose of the first six lines of the poem?"

Say, "Let's examine what these fish look like in real life, or if they even exist."

Visit: **www.liveaquaria.com**
This includes photos and facts about each fish mentioned in the poem.

Guide the students in discovering each element present in the poem. Students provide specific proof from the poem to support their thoughts. Reread the poem as a class or with a partner as needed. Record the examples on the board and/or on the **BLM** Poetry Vocabulary.

Elements present: Locate stanzas, repetition, rhythm *(verse)*, imagery, mood.

Ask, "What mood does the author create with this poem? *(interest, pleasure)* What makes you think this?"

Say, "Mood in poetry is the name of the emotional quality or emotional character the author wants you, the reader, to connect with. Authors develop the mood of a poem through four methods: setting, theme, tone, diction."

Write the four methods on the board. Students copy onto back of **BLM** Poetry Vocabulary.

Ask, "What is setting? What is theme?"

Say, "Tone and diction might be new terms for you. The tone is the point of view of the author. However, the poem as told through the author's point of view; will create a certain mood for the reader. Diction is the word choice of the author. The length of words and rhythm of words help to create the mood."

Ask, "Which method(s) did this author use to create the mood for this poem? Why do you think that?"

Unit 5, Lesson 1 — Grades 5-6

Classroom Lesson - continued

Say, "Let's turn to page 35 and read "*Home Poem or the Sad Dog Song."* As we read think of the mood the author wants you to connect with and how he does this."

Read the title and author's name aloud.
Ask, "Look at this poem. What do you notice about the structure? How do you think the author intends on the readers to read this poem?"

Allow two students at a time to read this poem. The second student reading the word after the colon. Reread the poem aloud, allowing two different students to read.

Guide the students in discovering each element present in the poem. **Students provide specific proof from the poem to support their thoughts.** Reread the poem as a class or with a partner as needed. Record the examples on the board and/or on the BLM poetry vocabulary.

Elements present: Rhyme, rhythm, repetition, identify how many stanzas (1), imagery (very simplistic), mood

Ask, "Who is speaking in the poem? Does this affect the author's word choice? What is the mood? What makes you think this? What method(s) does the author utilize to create this mood?"

AFTER READING

Practice and Application – Vocabulary & Literature

Say, "We are going to write a poem today from your favorite animal(s) point of view."

Group the student into partners. Partners will be utilized for writing this poem.

Say, "The poems we read today were meant to be read by two voices. You will write a poem with your partner from the point of view of your favorite animals. The poem format will be read by two people. It may follow the same pattern of stanzas as the first or second poem we read today. Your poem must contain the elements of rhyming, rhythm, imagery, and create a specific mood. Remember it is your animal(s) that are speaking in the poem, therefore the mood is a reflection of their temperament or point of view."

Allow students time to edit and revise their poems with their partner. While editing, the students should check that the poem has a rhythm. Share poems with the class or post on the wall for gallery walks at break.

Unit 5, Lesson 1 — Grades 5-6

Classroom Lesson - continued

Transition to Math

Students will play the game Fractional Fortitude from Unit 2 Lesson 1. Review the game instructions with students and modify the level of difficulty as appropriate.

BLMs are provided in this unit for easy access. They are exact copies of the BLMs from Unit 2 Lesson 1.

Practice and Application

Before playing the game, practice manipulating fractions in an equation to create common denominators. Work these examples with students on the board.

Ex 1: (only manipulating 1 fraction to create a common denominator)

$$\frac{2}{3} + \frac{1}{6} = ???$$

Ex 2: (manipulating both fractions)

$$\frac{1}{4} + \frac{1}{5} = ???$$

At this point in the summer program, students should not have to rely on step by step procedures to find a common denominator. Focus on number sense and relationships. Do not use Least Common Multiple as a prescribed method to find the answer for this activity.

Ex 1: "Look at the denominators. I know you know 3 and 6 are compatible or friendly. But can you tell me how?" *(Let students discuss amongst each other.)*

"Can we make 3 become 6 very easily?" *(Yes, double 2/3 to create 4/6. Then add it to 1/6.)*

Ex 2: "Look at the denominators. I know you know 4 and 5 are compatible and related. But can you tell me how?" (*Let students discuss amongst each other.)*

"Can we make 4 become a 5 very easily?" *(No, so we have to change both fractions.)*

"What number do 4 and 5 have in common?" *(Answers may vary, but the smallest number is 20.)* Walk students through the process of changing each fraction to a common denominator of 20.

ELPS (*English Language Proficiency Standard*)
1C, 2F, 2G, 3B, 3D, 3F, 4F

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.C.1., I.C.2., II.A.2., II.D.1.
MATH I.B.1.,IC.1., IIA..1., IV..A.1., IV.B.1., VI.B.1., VI. B.4.

Unit 5, Lesson 1 Grades 5-6

Classroom Lesson - continued

The diagram below shows the example BLM Fractional Fortitude Game Directions.

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
→ 6	6	12	18	24	30	36	42	48	54	60	66	72
→ 7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Group students in partner pairs to play the game Fractional Fortitude. Directions provided on the **BLM** Fractional Fortitude Game Directions. Players record their work and keep score in the chart on **BLM** Fractional Fortitude Record Sheet. Verification work is done on scratch paper only.

Extension variation: Pairs may use fractions larger than one *(improper fractions).*

Extension variation: Players may choose three dominoes.

It is likely that a student may choose fraction pairs with like denominators throughout the entire game. Ensure that ALL students have experience with unlike denominators. Redraw a domino, challenge them with an improper fraction by flipping it over, etc.

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Duplicate on cardstock and cut apart for word cards.

metaphor

rhyme

rhythm

repetition

Duplicate on cardstock and cut apart for word cards.

verse

alliteration

imagery

stanza

Unit 5 Lesson 1 – Classroom Lesson
Duplicate on cardstock and cut apart for word cards.

mood
anthology

Unit 5 Lesson 1 – Classroom Lesson
One per group

word	read	meaning	example	located in…
poetry	*po-et-ry*	*rhythmic literature written or spoken with expression of feelings*	*There was young woman from Boise, Whose sneakers were squeaky and noisy.*	*A Foot in the Mouth* by Paul Janeczko
metaphor				
rhyme				
rhythm				
verse				
repetition				
alliteration				
imagery				
stanza				
mood				

Unit 5 Lesson 1 – Transition to Math
One per group

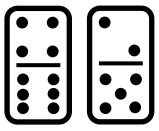
Fractional Fortitude Game Directions

Materials:

- set of dominoes
- 1 coin (with heads and tails)
- 12x12 multiplication chart
- **BLM** Fractional Fortitude Record Sheet

Procedure:
The object of the game is to add and subtract fractions with like and unlike denominators to earn points and have the highest score when class ends.

- Lay dominoes face down in a single layer between players.
- Player 1 chooses two dominoes at random and arranges them to show a fraction less than one, unless otherwise specified by the teacher.
- Player 1 flips the coin. Heads = addition Tails = subtraction
- Player 1 performs his/her calculations by first finding a common denominator. A multiplication chart is available to aid in finding a common multiple between denominators. Player 2 must use the common multiple Player 1 chooses and calculates on scratch paper to verify answer.
  Correct: Common denominator represents the number of points earned.
  Incorrect: Player receives one point (for effort).
- Player can choose to change an improper answer to a mixed fraction to double their points earned.
- Play moves to Player 2. Repeat process.
- Highest score when class ends is the winner!

Ex:
Player 1 chooses dominoes 4:6 and 2:5. 

Player 1 flips coin. Heads = addition 

Player 1 uses the multiplication chart to find a common multiple of 30.

Both players add the new fractions. $\frac{20}{30} + \frac{12}{30}$.

Player 1 correctly answers $\frac{32}{30}$ to earn 30 points.

Then simplifies to $1\frac{2}{30}$ for double the points and receives 60!

Roles reverse and play continues with Player 2.

Unidad 5 Lección 1 – Transición a las matemáticas

1 por grupo

Instrucciones del juego de Fortaleza con Fracciones

Materiales:

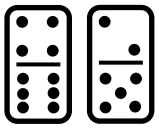
- juego de dominós
- 1 moneda (con cara y cruz)
- tabla de multiplicar de 12x12
- Hoja de registro de Fortaleza con Fracciones de **BLM**

Procedimiento:

El objetivo del juego es sumar y restar fracciones con denominadores iguales y diferentes para ganar puntos y tener la puntuación más alta cuando termine la clase.

- Coloca los dominós boca abajo en una sola capa entre los jugadores.
- El jugador 1 elige 2 dominós al azar y los acomoda para que muestren una fracción menor a 1, a menos que el maestro especifique lo contrario.
- El jugador 1 lanza la moneda. Cara = suma Cruz = resta
- El jugador 1 realiza sus cálculos encontrando primero un común denominador. Hay una tabla de multiplicar disponible para ayudar a encontrar un múltiplo común entre los denominadores. El jugador 2 debe usar el múltiplo común que elija el jugador 1 y calcula en papel borrador para verificar la respuesta.
  Correcto: El común denominador representa el número de puntos ganados.
  Incorrecto: El jugador recibe 1 punto (por su esfuerzo).
- El jugador puede decidir cambiar una respuesta impropia por una fracción mixta para duplicar los puntos que gana.
- El turno pasa al jugador 2. Repite el proceso.
- ¡Quien tenga más puntos al final de la clase es el ganador!

Ejemplo:

El jugador 1 elige los dominós 4:6 y 2:5. 

El jugador 1 lanza la moneda. 
Cara = suma

El jugador 1 usa la tabla de multiplicar para encontrar un múltiplo común de 30.

Ambos jugadores suman las nuevas fracciones. $\frac{20}{30} + \frac{12}{30}$.

El jugador 1 responde correctamente $\frac{32}{30}$ para ganar 30 puntos.

Luego simplifica a $1\frac{2}{30}$ para duplicar sus puntos, ¡y recibe 60!

Los papeles se invierten y el juego continúa con el jugador 2.

Unit 5 Lessons 1 – Transition to Math
One per partner pair

Fractional Fortitude Record Sheet

Record work on this handout while playing game.

	Player 1 work			Player 2 work		
	Unlike	**Like**	**points**	**Unlike**	**Like**	**points**
Turn 1						
Turn 2						
Turn 3						
Turn 4						
Turn 5						
Turn 6						
Turn 7						
Turn 8						
Turn 9						
Turn 10						
Total Points						

Unit 5 Lessons 1 – Transition to Math
One per student

Multiplication Chart

The common multiple used for the example game situation on BLM Fractional Fortitude Game Directions is highlighted on this chart. You may find multiples either vertically or horizontally.

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Materials
- **BLM** *Otter* Take Care of Your Aquarium!

Math Vocabulary
fraction
ratio
decimal
percent
equivalent
scale factor
constant of proportionality
benchmark

Literature Vocabulary
metaphor
rhyme
rhythm
repetition
verse
alliteration
imagery
stanza
mood
anthology

ELPS (*English Language Proficiency Standard*)
1E, 1F, 2G, 2H, 3D, 3G, 4G, 5B, 5C

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.1., I.C.2., I.E.1., II.B.2.
ELA I.A.2., I.A.3., II.A.2., II.A.3., III.B.1., IV.A.1.
MATH I.B.1., I.C.1., II.A.1., II.C.1., IV.B.1., VIII.A.3., VIII.A.4.

Unit 5, Lesson 1 — Grades 5-6

TV Lesson

Math Objectives:
- Add and subtract positive rational numbers fluently.
- Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Building Background
Unit 5 is utilized as a review of all skills that will be assessed for both 5th and 6th grade. Teachers are to differentiate and modify lessons to meet the needs of their individual students to ensure they are prepared for the post-assessment.

Comprehensible Input
This problem set gives students the opportunity to review fraction and decimal concepts through addition and subtraction.

Problem #1 – Decimals
Students will add and subtract decimals within this problem situation. There are various ways to solve. This example shows the addition of different food categories and then the subtraction from the total.

Equation: **51.65 lbs. (fish) + 13.6 lbs. (frogs) + 5.08 lbs. (crayfish) = 70.33 lbs. (food)**

Equation: **75.09 lbs. (total) – 70.33 lbs. (fish, frogs, crayfish) = 4.76 lbs.**

That means 4.76 lbs. of the food eaten came from other sources.

Problem #2 – Decimals and Fractions
Students will add and subtract fractions and decimals within this problem situation. There are various ways to solve. This example converts the fraction to a decimal. Students may need to be reminded of the equivalent decimals for fifths.

New equation: **6.25 ppm – 2.60 ppm = 3.5 ppm**

That means the treatment decreased the ammonia level by 3.5 ppm.

Unit 5, Lesson 1 — Grades 5-6

TV Lesson - continued

Problem #3 – Unlike denominators

Students will subtract fractions with unlike denominators using a pictorial model in this problem situation. The numbers were purposefully chosen so manipulation of both fractions is necessary.

Equation: $\frac{7}{8} - \frac{1}{3} = ???$

The common denominator between 8 and 3 can be 24. This is easily found on the multiplication chart. The chart will also provide students with the factor to multiply each fraction by in order to create an equivalency.

$$\left(\frac{3}{3}\right)\frac{7}{8} - \frac{1}{3}\left(\frac{8}{8}\right) = ???$$

New equation: $\frac{21}{24} - \frac{8}{24} = ???$

Remind students that the denominator acts as a label defining the size of the pieces. This equation is no different than saying, "21 cookies minus 8 cookies equals _____?" *($\frac{13}{24}$ is how much the tank needs to be filled in order to reach the full-line.)*

Pirate's Corner

Understanding the denominator is important to understanding fractions and how to solve problems involving them. Tell Captain and the TV Teacher why the denominator is so important!

Objectives

Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 5 Lesson 1-3 – TV Lesson
Duplicate on cardstock and cut apart for word cards.

fraction

ratio

decimal

percent

Duplicate on cardstock and cut apart for word cards.

equivalent

scale factor

constant of proportionality

benchmark

Unit 5 Lesson 1-3 – TV Lesson
Duplicate on cardstock and cut apart for word cards.

fracción

razón

decimal

porcentaje

Duplicate on cardstock and cut apart for word cards.

equivalente

Factor de escala

Constant de proporcionalidad

de referencia

Unit 5 Lesson 1 – TV Lesson

Otter Take Care of Your Aquarium!

Work with your teacher and in groups to solve the problems.

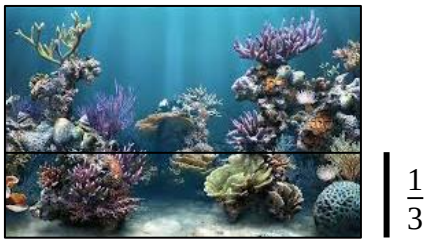
1. Mr. Otter's family eats a large amount of food each day. The animal handlers keep detailed logs on how much food is actually consumed. Yesterday they ate a total of 75.09 pounds. 13.6 pounds was a mixture of different species of frogs, 51.65 pounds of trout and other native fish species, 5.08 pounds were live crayfish, and the remaining food came from various other sources. How much food came from various sources?

2. Nelli's fish suddenly died in the tank. She tested the ammonia level and it was at 6.25 ppm (parts per million). Ammonia levels are supposed to stay at 0.0 ppm. She treated the water and tested again the next day. The level measured $2\frac{3}{5}$ ppm. How much did one treatment decrease the ammonia level?

3. Picture 1 represents the water level of a tank that is considered full. Picture 2 shows Annabelle's tank after some evaporation. How much higher does the water level need to rise in her tank to be considered full again?

Picture 1

Picture 2



Unidad 5 Lección 1 – Lección TV

***¡Otter cuida tu acuario*!**

Colabora con tu maestro y en grupos para resolver los problemas.

1. La familia del Sr. Otter come una gran cantidad de alimentos cada día. Los encargados de los animales llevan registros detallados de cuánta comida se consume realmente. Ayer, comieron un total de 75.09 libras. 13.6 libras eran una mezcla de diferentes especies de ranas, 51.65 libras de trucha y otras especies de peces nativos, 5.08 libras eran de cangrejos de río vivos y el resto de alimentos provenía de otras fuentes. ¿Cuántos alimentos provinieron de otras fuentes?

2. El pez de Nelli murió en la pecera de repente. Evaluó el nivel de amoníaco, y era de 6.25 ppm (partes por millón). Se supone que los niveles de amoníaco se deben mantener en 0.0 ppm. Trató el agua y la evaluó nuevamente al día siguiente. El nivel medía $2\frac{3}{5}$ ppm. ¿Cuánto disminuyó el nivel de amoníaco un tratamiento?

3. La Imagen 1 representa el nivel de agua de una pecera que se considera llena. La Imagen 2 muestra la pecera de Annabelle luego de un poco de evaporación. ¿Cuánto más necesita subir el nivel de agua en su pecera para que se la considere llena de nuevo?

Dibujo 1

$\frac{7}{8}$

Dibujo 2

Materials
- 6 deca-dice (10-sided numbered 0-9)
- 1 coin
- set of digit cards (if dice are not available)
- scratch paper

All items listed above per partner pair.
- **BLM** Money Mayhem Game Directions
- **BLM** Money Mayhem Record Sheet

Math Vocabulary
fraction
ratio
decimal
percent
equivalent
scale factor
constant of proportionality
benchmark

Literature Vocabulary
metaphor
rhyme
rhythm
repetition
verse
alliteration
imagery
stanza
mood
anthology

ELPS (*English Language Proficiency Standard*)
1C, 2E, 2F, 23C, 3F, 3I, 4J, 5B

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.C.1., I.C.2., II.A.3., II.B.2.
ELA I.A.1., I.A.2., III.B.1., III.B.3., IV.A.3.
MATH I.B.1., I.C.1., II.B.2., VIII.A.1., VIII.A.3

Unit 5, Lesson 1 — Grades 5-6

Follow-up

Math Objectives:
- Add and subtract positive rational numbers fluently.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Students will play the game Money Mayhem from Unit 1 Lesson 1. Review the game instructions with students and modify the level of difficulty as appropriate.

BLMs are provided in this unit for easy access. They are exact copies of the BLMs from Unit 1 Lesson 1.

Practice and Application
Group students in partner pairs to play the game Money Mayhem. Directions provided on the **BLM** Money Mayhem. Players record their work and keep score in the chart on **BLM** Money Mayhem Record Sheet. Verification work is done on scratch paper only.

Extension variation: Groups may consist of four members. They will follow the same process but with four created dollar amounts instead of two. Heads on the coin flip will remain addition. However, Tails will mean students must skillfully pair two of the dollar amounts, subtract them, and then subtract those differences.

Example:
Player 1 rolls and creates $4898.01
Player 2 rolls and creates $2004.36
Player 3 rolls and creates $7456.91
Player 4 rolls and creates $0342.10

Player 1 decides to calculate
$7456.91 - $4898.01 = $2558.90 and
$2004.36 - $0342.10 = $1662.26.
Now he/she must find the difference of those two answers.
$2558.90 - $1662.26 = $896.64.

The digit in the tens-place in the Final Solution is how many points that Player earns for their work if correctly answered. Player 1 receives nine points for this example.

This is where "skillfully" choosing their equations comes in handy. This strategy will help build number sense and mental math skills.

Teacher Note
Unit 5 is utilized as a review of all skills that will be assessed for both 5th and 6th grade. Teachers are to differentiate and modify lessons to meet the needs of their individual students to ensure they are prepared for the post-assessment.

Teacher Note
Deca-dice are ideal for 5th – 6th grade because digits range from 0-9 as opposed to 1-6 on regular cube dice. (6-sided dice significantly limit the number choices and mathematical experiences in this activity.) If deca-dice aren't accessible, use the number cards provided. Print on card stock, cut out, and hide in paper lunch sack. Players choose 6 numbers at random instead of rolling dice.

Teacher Note
Variation Suggestion:
For this game, points awarded are found in the tens-place. Change the place value spot each time they play the game. You can even change the place value spot in the middle of a game. "OK! Now you have to find your points in the hundredths-place!"

Follow-up - continued

Monitor students groups, stopping to ask thought provoking questions.

QUESTIONS

- Do you think your answer will be less/more than $1000? Why?
- Why did you arrange your numbers that way?
- Are you able to arrange your numbers in such a way to ensure you have a high digit in the tens-place? If so, what is your mental strategy?

Recursive Review
omitted

Writing Topics

Independent Writing Topic
Students will have a daily writing activity which will incorporate the day's focus math vocabulary.

- **Explain your strategy for scoring the highest points possible.**

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 5 Lesson 1 – Follow-up
One per group

Money Mayhem Game Directions

Materials:

- 6 deca-dice (10-sided dice labeled 0-9)
- 1 coin (with heads and tails)
- **BLM** Money Mayhem Record Sheet

Procedure:
The object of the game is to be the first player to make it to the top of the mountain. You advance on the arrow-led path by correctly creating a similar rectangle using the dimensions provided by a domino and a scale factor determined by the die.

- Player 1 rolls all 6 deca-dice and arranges them to create a dollar amount up to the thousands place, but not less than the hundreds place (if possible). Each die is used exactly once. Must include two decimal places (tenths, hundredths). Record number.
- Player 2 repeats first step. Record number.
- Player 1 flips coin. Heads = add, Tails = subtract.
- Both players calculate the (addition/subtraction) of the two dollar amounts created by the dice. (Player 2 is calculating to verify Player 1's answer. Use scratch paper for verification work.)
  Correct: Number in the tens-place of the Final Solution equals number of points awarded for work.
  Incorrect: Player receives 1 point (for effort).
- Play moves to Player 2. Repeat process.
- Highest score when class ends is the winner!

Ex:
Player 1 rolls dice shown in picture.
Arranges to make $6,024.12

Player 2 rolls dice shown in picture.
Arranges to make $8,331.95

Player 1 flips coin.
Heads = addition

Both players find the sum of the two dollar amounts. Player 1 correctly answers $14,356.07.

Number in the tens-place is 5, so Player 1 receives 5 points.

Roles reverse and play continues with Player 2.

Unidad 5 Lección 1 – Seguimiento

1 por grupo

Instrucciones del juego Confusión Monetaria

Materiales:

- 6 deca-dados (dados de 10 lados marcados del 0 al 9)
- 1 moneda (con cara y cruz)
- Hoja de registro de Confusión Monetaria **BLM**

Procedimiento:

El objetivo del juego es ser el primer jugador en llegar a la cima de la montaña. Avanzas en el camino siguiendo las flechas creando correctamente un rectángulo similar usando las dimensiones dictadas por un dominó y un factor de escala determinado por el dado.

- El jugador 1 lanza todos los 6 deca-dados y los acomoda para crear una cantidad de dólares hasta los miles, pero no menor de centenas (si es posible). Cada dado se usa exactamente una vez. Deben incluirse dos espacios decimales (décimas, centésimas). Anota el número.
- El jugador 2 repite el primer paso. Anota el número.
- El jugador 1 lanza la moneda. Cara = sumar, Cruz = restar.
- Ambos jugadores calculan la (suma/resta) de las dos cantidades de dólares creadas por los dados. (El jugador 2 calcula para verificar la respuesta del jugador 1. Usa papel borrador para hacer la verificación).
  Correcto: El número en el espacio de las decenas de la solución final es el número de puntos otorgados por el trabajo.
  Incorrecto: El jugador recibe 1 punto (por su esfuerzo).
- El turno pasa al jugador 2. Repite el proceso.
- ¡Quien tenga más puntos al final de la clase es el ganador!

Ejemplo:

El jugador 1 obtiene los dados mostrados en la imagen.
Los ordena para formar $6,024.12

El jugador 2 obtiene los dados mostrados en la imagen.
Los ordena para formar $8,331.95

El jugador 1 lanza la moneda.
Cara = suma

Ambos jugadores calculan la suma de las dos cantidades de dólares. El jugador 1 responde correctamente $14,356.07.

El número en el espacio de las decenas es 5, así que el jugador 1 recibe 5 puntos.
Los papeles se invierten y el juego continúa con el jugador 2.

Unit 5 Lessons 1 – Follow-up
One set of 60 digit cards per group

Digit Cards

0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9

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Unit 5 Lessons 1 – Follow-up
One per partner pair

Money Mayhem Record Sheet

Record work on this handout while playing game.

	Player 1 work	points	Player 2 work	points
Turn 1				
Turn 2				
Turn 3				
Turn 4				
Turn 5				
Turn 6				
Turn 7				
Turn 8				
Turn 9				
Turn 10				
Total Points				

Materials
- 3 Laughing Cow Cheese wedges
- 2 paper dessert plates
- 2 paper towels
- 2 plastic knives

All items listed above per partner pair
- **BLM** Laughing Cow Cheese-Snack Fractions
- **BLM** Laughing Cow Cheese-Snack Fractions Teacher Guide

Math Vocabulary
fraction
ratio
decimal
percent
equivalent
scale factor
constant of proportionality
benchmark

Literature Vocabulary
metaphor
rhyme
rhythm
repetition
verse
alliteration
imagery
stanza
mood
anthology

Unit 5, Lesson 1 — Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents.
- Convert between fractions, decimals, and percents.
- Estimate to find solutions to problems involving fractions, decimals, and percents.

Language Objectives
- Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.

Snack Fractions
The Snack Fraction activities for this unit will focus on combining and separating fractional parts as well as dividing into fourths. A Teacher Guide for the BLM is provided.

Three Laughing Cow Cheese wedges are considered three separate whole units for this activity. One wedge = one whole.

QUESTIONS
- What is the whole in this situation?
- How do I break this up into equal shares?
- What does that fraction represent?
- Does this fraction have an easily calculated decimal equivalent?
- How can you find the decimal of this fraction?
- How did you calculate the percent?

Once the activity is complete, let them enjoy their snack!

Snack Fraction Journal Writing: BLM Laughing Cow Cheese-Snack Fractions
Mathematically, did you run into any challenges when dividing the three wedges into four equal portions? Explain.

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 5 Lesson 1 – Snack Fractions
One per student

Laughing Cow Cheese – Snack Fractions

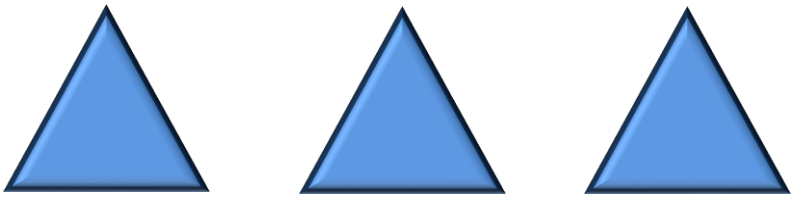
Divide the snack equally between you and your partner.
Work together to solve the problems.

1. What is defined as the whole unit? _____

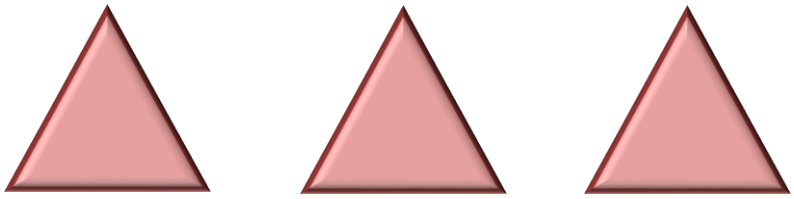
2. What fraction represents your portion?

   fraction _____ decimal _____ percent _____

3. Use the picture to model how you divided the wedges between you and your partner.



4. Two best friends join your group and want to share the snack. Use the picture to model how you would divide the wedges between you, your partner, and 2 friends.



5. What fraction represents your new portion out of the whole?

   fraction _____ decimal _____ percent _____

6. What fraction represents your portion and 2 partners out of the <u>whole</u>? Write an equation to prove your answer.

7. Mathematically, did you run into any challenges when dividing the 3 wedges into 4 equal portions? Explain.

Unit 5 Lesson 1 – Snack Fractions
One per student

Queso La Vaca que ríe - Fracciones de refrigerios

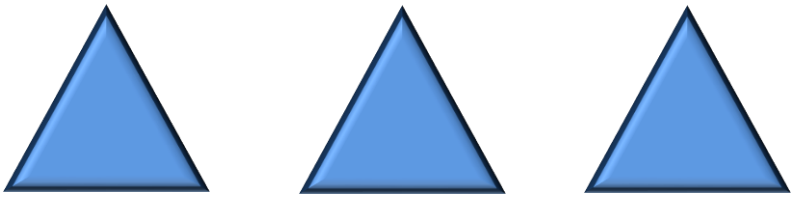
Divide los refrigerios de manera equitativa entre tú y tu compañero. Trabajen juntos para resolver los problemas.

1. ¿Qué se define como la unidad entera? _____

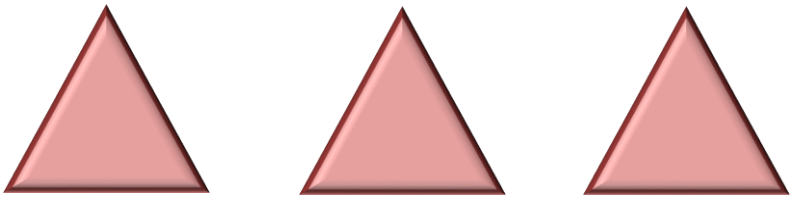
2. Qué fracción representa tu porción?

   fracción _____ decimal _____porcentaje _____

3. Usa la imagen para modelar cómo dividiste las cuñas entre tú y tu compañero.



4. Dos mejores amigos se unen a tu grupo y quieren compartir el refrigerio. Usa la imagen para modelar cómo dividirías las cuñas entre tú, tu compañero y los 2 amigos.



5. ¿Qué fracción representa tu nueva porción del entero?

   fracción _____ decimal _____ porcentaje _____

6. ¿Qué fracción representa tu porción y la de 2 compañeros del entero? Escribe una ecuación para demostrar tu respuesta.

7. Matemáticamente, ¿se te presentó algún desafío al dividir las 3 cuñas en 4 porciones iguales? Explica tu respuesta.

Unit 5 Lesson 1 – Snack Fractions
One per student

Laughing Cow Cheese – Snack Fractions Teacher Guide

Divide the snack equally between you and your partner.
Work together to solve the problems.

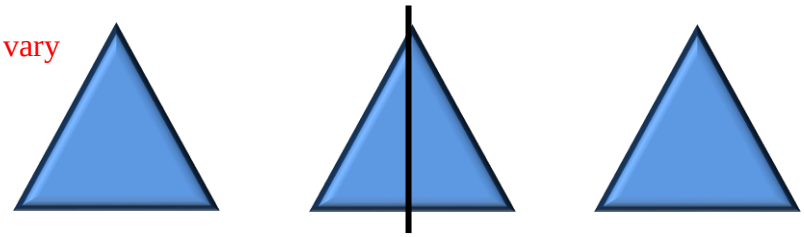
1. What is defined as the whole unit? 1 cheese wedge

2. What fraction represents your portion?

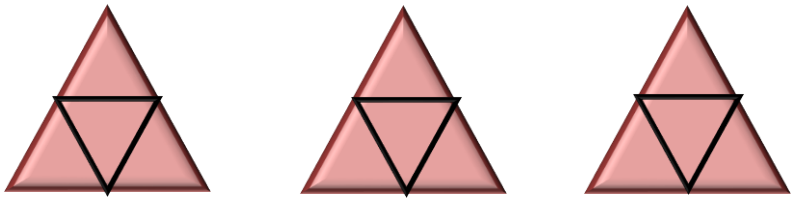
   fraction $\frac{1}{2}$ decimal 0.5 percent 50%

3. Use the picture to model how you divided the wedges between you and your partner.

   pictures will vary



4. Two best friends join your group and want to share the snack. Use the picture to model how you would divide the wedges between you, your partner, and 2 friends. pictures will vary



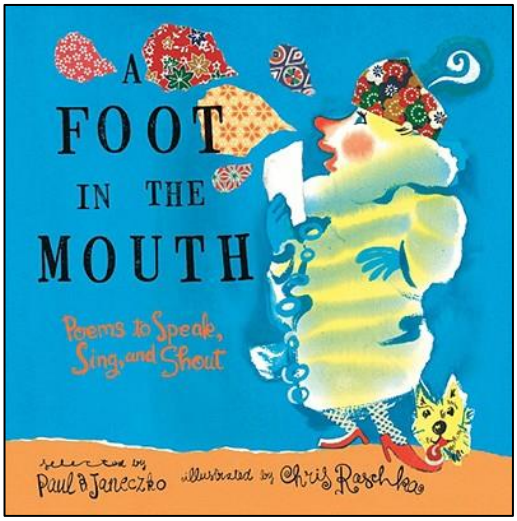
5. What fraction represents your new portion out of the whole?

   fraction $\frac{3}{4}$ decimal 0.75 percent 75%

6. What fraction represents your portion and 2 partners out of the <u>whole</u>? Write an equation to prove your answer. $\frac{3}{4} + \frac{3}{4} + \frac{3}{4} = \frac{9}{4}$ or $2\frac{1}{4}$

7. Mathematically, did you run into any challenges when dividing the 3 wedges into 4 equal portions? Explain. answer will vary

Unit 5 Lesson 1 – Family Fun



Dear _____,

We read the poem *Fishes* by Georgia Heard and *Home Poem Or, the Sad Dog Song* by J. Patrick Lewis in class today.

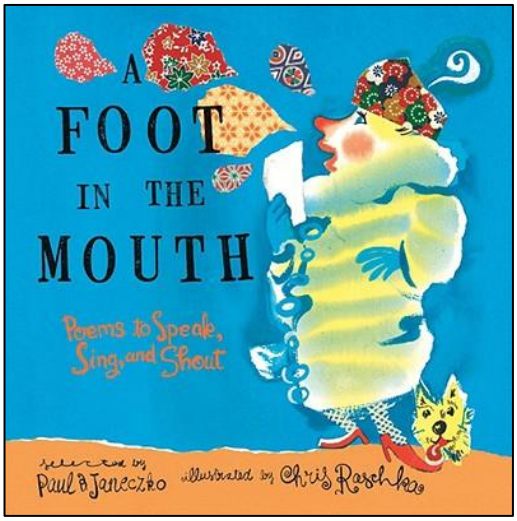
We did an activity with salt water and these are the math skills I used during the experiment…

_____

_____

_____

Unidad 5, Lección 1 – Diversión familiar **5-6**



Querido _____,

En clases, hoy leímos el poema *Peces,* de Georgia Heard, y *Home Poem Or, the Sad Dog Song* de J. Patrick Lewis.

Hicimos una actividad con agua salada, y estas son las habilidades de matemáticas que usé durante el experimento...

_____

Atentamente,

_____

Sincerely,

_____

Materials
- **BLM** Walk the Plank!- Measurement Lab Record Sheet
- **BLM** Walk the Plank! - Measurement Lab Record Sheet Teacher Guide
- **BLM** Measurement Lab Teacher Instruction Page
- **BLM** Solve It! Problem 2
- **BLM** Fraction Action and *X* Marks the Spot
- **BLM** Lessons 1-3 CGI *A Foot In the Mouth*

Math Objectives
- Solve problems using a measurement tool and calculating measurements.
- Model and solve multistep word problems.
- Solve problems involving fractions, ratios, and proportions.
- Compose and decompose numbers.

Language Objectives
- Speak to partners, teacher, and class using vocabulary.
- Discuss problem solving process and strategies.

Math Vocabulary
fraction
ratio
decimal
percent
equivalent
scale factor
constant of proportionality
benchmark

Literature Vocabulary
metaphor
rhyme
rhythm
repetition
verse
alliteration
imagery
stanza
mood
anthology

Unit 5, Lesson 2 — Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post -assessment. They are not optional.

ESSENTIAL

Measurement Lab
- Lesson 1 – Argh Matey, *At Sea At Sea (6th assessment item 1,5,6)*
- **Lesson 2 – Walk the Plank! (6th assessment item 1,5,6)**
- Lesson 3 – Ghost Ship (5th assessment item 1,2,3,4,5,6)

Lesson 2 Materials
- 3 one-quart mason jars (or other container with lid)
- 1 cup table salt
- 3 eggs
- 1/4 dry measuring cup
- 1 gallon of water

Lesson 2 Student Groups
Students will dissolve different amounts of salt into water and test the buoyancy of raw eggs. They will apply their measurements in ratio and proportion situations.

Solve It! Multi-step problem solving
- Lesson 1 - triads, 3-step (5th asmnt item 4, 5)
- **Lesson 2 - triads, 3-step (6th asmnt item 4)**
- Lesson 3 - omit

Fraction Action
- Lesson 1 – *(5th assessment item 1,2,3)*
- **Lesson 2 – (5th assessment item 6)**
- Lesson 3 – omit

***X* Marks the Spot**
- Lesson 1 – *(6th assessment item 8)*
- **Lesson 2 – (6th assessment item 7)**
- Lesson 3 – (6th assessment item 4)

CGI
- Lesson 1 – Part-Part-Whole (5th assessment item 4)
- **Lesson 2 – Compare Referent Unknown (5th assessment item 5)**
- Lesson 3 – Price Partitive Division (6th assessment item 6)

Assessed TEKS for this Unit 5th – 5.3H, 5.3K 6th – 6.4C, 6.4D, 6.4E, 6.5B, 6.5C **ELPS** (*English Language Proficiency Standard*) 2D, 2E, 2H, 3B, 3D, 3H, 4C **CCRS** (*College and Career Readiness Standards)* CROSS-CURRICULAR I.B.1., I.C.1., I.C.2., I.C.3., II.A.4. ELA II.A.2., II.A.3., II.B.1., III.B.1., MATH I.B.1., II.A.1., IV.A.1., IV.B.1., VIII.A.3., VIII.A. 4.	**Unit 5, Lesson 2** **Grades 5-6** **Daily Routine -** continued **----------** **The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.** **----------** **OPTIONAL** **Target Number** • Lesson 1 – *Target Number 10* • **Lesson 2 – Target Number 30** • Lesson 3 – Target Number 60 **Money Matters** (*If you have a full program and wish to use this optional activity, you will find BLMs and Explanations on MAS Space.)*

Unit 5 Lesson 2 – Daily Routines – Measurement Lab
One per student

Walk the Plank! – Measurement Lab Record Sheet (1 of 2)

Materials:

- 3 one-quart mason jars (or other container with lids)
- 1 cup table salt
- 3 eggs
- 1/4 dry measuring cup
- 1 gallon of water

Task:
First Mate Eggnacio was caught organizing a mutiny! Desperate times call for desperate measures. Even though he is Captain Portio's best mate, action has to be taken to keep the respect of the crew. Eggnacio must walk the plank. He has the choice to plunge into a fresh water lake, the Pacific Ocean, or the Dead Sea. Your group must figure out which one Eggnacio should choose.

Procedure:

- Label jar 1 "fresh water," jar 2 "Pacific Ocean," and jar 3 "Dead Sea."
- Fill each jar with equal amounts of water (about 4 cups) leaving room for salt.
- Dissolve 1/4 cup salt into "Pacific Ocean" by replacing the lid and shaking carefully. Set down and remove lid.
- Dissolve 1/2 cup salt into "Dead Sea." Follow same procedure as previous jar.
- Test the "fresh water" by gently dropping Eggnacio (egg) into the jar. Record results.
- Test the "Pacific Ocean" by following the same procedure. If Eggnacio sinks to the bottom, slowly pour about 1/8 cup of salt (or less) into jar until he floats to the middle. Record results.
- Test the "Dead Sea" by following the same procedure as "fresh water." Record results.

Results	Fresh Water	Pacific Ocean	Dead Sea
Description			
Picture			

Unit 5 Lesson 2 – Daily Routines – Measurement Lab
One per student

¡A caminar por la plancha! -

Materiales:

- 3 frascos de un cuarto (u otro contenedor con tapas)
- 1 taza de sal de mesa
- 3 huevos
- taza para medir seca de 1/4
- 1 galón de ag

Tarea:
¡Se lo descubrió al primer oficial Eggnacio organizando un motín! Los tiempos desesperados exigen medidas desesperadas. A pesar de que es el mejor oficial del Capitán Portio, había que tomar medidas para mantener el respeto de la tripulación. Eggnacio debía caminar por la plancha. Tenía la opción de zambullirse en un lago de agua fresca, el Océano Pacífico o el Mar Muerto. Tu grupo debe resolver cuál debe elegir Eggnacio.

Procedimiento:

- Etiqueta el jarro 1 "agua fresca", el jarro 2 "Océano Pacífico" y el jarro 3 "Mar Muerto".
- Llena cada jarro con cantidades iguales de agua (alrededor de 4 tazas) dejando espacio para la sal.
- Disuelve 1/4 taza de sal en "Océano Pacífico" remplazando la tapa y sacudiendo con cuidado. Déjalo quieto y quita la tapa.
- Disuelve 1/2 taza de sal en "Mar Muerto". Sigue el mismo procedimiento que para el jarro anterior.
- Evalúa el "agua fresca" dejando caer suavemente a Eggnacio (huevo) en el jarro. Anota los resultados.
- Evalúa el "Océano Pacífico" siguiendo el mismo procedimiento. Si Eggnacio se hunde hasta el fondo, vierte lentamente aproximadamente 1/8 taza de sal (o menos) en el frasco hasta que flote hasta la mitad.
- Evalúa el "Mar Muerto" siguiendo el mismo procedimiento que para "agua fresca".

Resultados	Agua fresca	Océano Pacífico	Mar Muerto
Descripción			
Imagen			

Anota los resultados.

Unit 5 Lesson 2 – Daily Routines – Measurement Lab
One per student

Walk the Plank! – Measurement Lab Record Sheet (2 of 2)

Work with your group to answer the following questions. Measurements in this activity are not accurate representations of the real Dead Sea's salinity. These measurements are for this activity only.

1. Which body of water should Eggnacio choose to walk the plank into? Why?

2. The "Dead Sea" used 0.5 cup of salt to 4 cups of water. At this rate, how much salt would be added to 1 gallon of water to maintain the same salinity? Use a ratio table.

labels	**known**					**unknown**
cups salt						**?**
quarts water						**1 gallon**

3. Use the information found in question #2. The "Dead Sea" in our activity is about 160 billion gallons of water. Using equivalent ratios, calculate how many cups of salt are in the "Dead Sea."

Unit 5 Lesson 2 – Daily Routines – Measurement Lab
One per student

¡A caminar por la plancha! - Hoja de registro del laboratorio de medición (2 de 2)

Colabora con tu grupo para responder las siguientes preguntas. Las mediciones en esta actividad no son representaciones precisas de la salinidad real del Mar Muerto. Estas mediciones son solo para esta actividad.

1. ¿Qué masa de agua debería elegir Eggnacio para caminar por la plancha? ¿Por qué?

2. El "Mar Muerto" usó 0.5 tazas de sal a 4 tazas de agua. Según este índice, ¿cuánta sal se agregaría a 1 galón de agua para mantener la misma salinidad? Usa una tabla de relaciones.

etiquetas	**conocidas**					**No conocidas**
Tazas de sal						**?**
Cuartos de agua						**1 galón**

4. Utiliza la información de la pregunta n.º 2. El "Mar Muerto" en nuestra actividad es de aproximadamente 160 mil millones de galones de agua. Usando relaciones equivalentes, calcula cuántas tazas de sal hay en el "Mar Muerto".

Unit 5 Lesson 2 – Daily Routines – Measurement Lab
One per student

Walk the Plank! – Teacher Guide

Results	Fresh Water	Pacific Ocean	Dead Sea
Description	Eggnacio sank to the bottom of the jar.	Eggnacio floated in the middle of the jar.	Eggnacio floated to the surface and stayed there.
Picture			

1. Which body of water should Eggnacio choose to walk the plank into? Why?
   Dead Sea. He will survive because he will float on top of the water without any effort.

2. The "Dead Sea" used 0.5 cup of salt to 4 cups of water. At this rate, how much salt would be added to 1 gallon of water to maintain the same salinity? Use a ratio table.

labels	**known**	double	double			**unknown**
cups salt	**0.5 cup**	**1 cup**	**2 cups**			**2 cups**
quarts water	**1 qt**	**2 qt**	**4 qt**	**(4 qt = 1 gallon)**		**1 gallon**

3. Use the information found in question #2. The "Dead Sea" in our activity is about 160 billion gallons of water. Using equivalent ratios, calculate how many cups of salt are in the "Dead Sea". Scale Factor is (x160 billion). Double 160. Use number sense and mental math. It is not intended for students to multiply 2 x 160,000,000,000 step-by-step.

$$\frac{\textbf{2 cups salt}}{\textbf{1 gallon water}} = \frac{\textbf{\textit{x} cups of salt}}{\textbf{160 billion gals water}} \rightarrow \frac{\textbf{2 cups salt}}{\textbf{1 gallon water}} = \frac{\textbf{320 billion cups salt}}{\textbf{160 billion gals water}}$$

per partner pair

Problem 4:
Jamie knew her property taxes would be around 2.5% of the cost of her home. If she paid $5,000 in taxes, how much did she pay for her home? **Hint – Find 25%.*

Step 1 – Name:	Verification – Name:
Step 2 – Name:	Verification – Name:
Step 3 – Name:	Verification – Name:
Final Solution – Name:	Verification – Name:

Unit 5 Lesson 2 – Daily Routines – Solve It! (triads) **5-6**
per partner pair

Problem 4:
Jamie sabía que sus impuestos a la propiedad serían de un 2.5% del costo de su hogar. Si pagó $5,000 en impuestos, ¿cuánto pagó por su hogar? **Pista – Al encontrar el 25% se soluciona este problema en 2 pasos.*

Paso 1 – Nombre:	Verificación – Nombre:
Paso 2 – Nombre:	Verificación – Nombre:
Paso 3 – Nombre:	Verificación – Nombre:
Solución Final – Name:	Verificacioón – Nombre:

Unit 5 Lesson 2 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

Tara ran a mile in exactly $6\frac{1}{2}$ minutes during her first track meet. She improved for the next meet and ran it in 5.8 minutes. How much faster did she run the mile the second time around?

X Marks the Spot

Solve for *x* (the amount of interest charged)

20% interest on credit card purchases of $163.04 = *x*

Unit 5 Lesson 2 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

Tara corrió una milla en exactamente $6\frac{1}{2}$ minutos durante su primera competición en la pista. Mejoró para la siguiente competición y corrió en 5.8 minutos. ¿Cuánto más rápido corrió la milla la segunda vez?

X Marca el sitio

Resuelve para *x* (el total del interés cobrado)

20% de interés sobre compras con tarjeta de crédito por $163.04 = *x*

Materials
- **BLM** Fraction-Decimal Memory Game A Directions
- Fraction-Decimal Memory Cards A (3 pages)

Literature Selection
A Foot in the Mouth selected by Paul B. Janeczko
selection *I Am Standing - Girl on Land, Boy at Sea* by April Halprin Wayland and Bruce Balan p.26-27
selection *Old Hank* by anonymous p.40

Math Vocabulary
fraction
ratio
decimal
percent
equivalent
scale factor
constant of proportionality
benchmark

Literature Vocabulary
metaphor
rhyme
rhythm
repetition
verse
alliteration
imagery
stanza
mood
anthology

ELPS (*English Language Proficiency Standard*)
1G, 2B, 2C, 3D, 4C, 4J, 4K

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., II.A.3., II.A.4., II.B.1., II.B.2.
ELA I. B.1., II.A.2., II.A.3., II.A.6., II.A.7., II.B.1., III.A.

Teacher Note
Unit 5 is utilized as a review of all skills that will be assessed for both 5th and 6th grade. Teachers are to differentiate and modify lessons to meet the needs of their individual students to ensure they are prepared for the post-assessment.

Unit 5, Lesson 2 — Grades 5-6

Classroom Lesson

Everyday teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

Math Objectives:
- Use models to relate decimals to fractions.
- Generate equivalent forms of rational numbers including whole numbers, fractions, and decimals.

Language Objectives:
- Make inferences and draw conclusions about the structure and elements of poetry and provide evidence from text to support understanding.
- Analyze how poets use sound effects to reinforce meaning.
- Listen attentively to speakers, ask relevant questions, and make pertinent comments.
- Write poems using poetic techniques, figurative language, and graphic elements.

BEFORE READING
Building Background – Vocabulary & Literature
Reread the words aloud with the students.
Direct students to take out the BLM poetry vocabulary from lesson 1.
Allow students to use the BLM for assistance in the following activity.
Partner up students.

Say, "Listen and discuss with your partner to determine the vocabulary word I am thinking of.

Say, "House, mouse. stop, crop. green, mean.
Allow students to think and then tell their partner, then share with class.

Say, "Sally sells seashells by the seashore."
Allow students to think and then tell their partner, then share with class.

Say, "Life is a journey. I am a night owl."
Allow students to think and then tell their partner, then share with class.

Say, "What do we refer to as the paragraphs in poetry?"
Allow students to think and then tell their partner, then share with class.

Definitions:
metaphor (figure of speech) 3 syllables
a connection of two objects not usually connected
i.e. *love is a rose*

rhyme 1 syllable
two or more words which match in the same last sound
i.e. *cat bat*

rhythm 2 syllables (schwa before the /m/)
the beat or cadence of poetry

repetition 4 syllables
using a key word several times throughout a poem

verse (iambic pentameter) 1 syllable
has no rhyme but has rhythm

alliteration 5 syllables
two words in the same line with the same starting sound
i.e. *the price of the previous one*

imagery 4 syllables
pictures drawn in the reader's mind by the words of the poet

stanza 2 syllables
a paragraph in poetry, surrounded above and below by skipped lines

mood 1 syllable
the feeling of the reader of a poem.

anthology- noun, from Greek *anthologia*, from *anthos* 'flower' + -*logia* 'collection' (from *legein* 'gather'). In Greek, the word originally denoted a collection of the "flowers" of verse, i.e., small choice poems or epigrams, by various authors.
a book or other collection of selected writings by various authors meet the needs of their individual students to ensure they are prepared for the post-assessment.

Classroom Lesson - continued

Say, "The beat or cadence of a poem, such as *(do not sing),* "I'm a little teapot, short and stout. Here is my handle, here is my spout. When I get all steamed up hear me shout. Tip me over, pour me out." *(Tap your foot or hand as you read the poem.)*
Allow students to think and then tell their partner, then share with class.

Say, "I'm reading a poem that contains a key word used several times throughout."
Allow students to think and then tell their partner, then share with class.

Say, "A mind movie or mental picture is created in the reader's mind by the author's word choice."
Allow students to think and then tell their partner, then share with class.

Say, "Created through methods of setting, theme, tone, and diction."
Allow students to think and then tell their partner, then share with class.

Say, "When we read the poems today, remember we are actively listening for which elements are present."

Direct the students in turning to pages 26 & 27.

Ask, "What do you notice about how this poem is constructed?
How many stanzas are in this poem? How do you know?
What do you predict this poem will be about? What makes you think that?"

Allow student to share with a partner the times when they have climbed a tree. Encourage them to tell what it felt like to climb and be in the tree. Where was the tree located? What did they see or do in the tree? Share your personal experiences climbing a tree and how it felt.

DURING READING
Comprehensible Input - Vocabulary & Literature

TEACHER NOTE: For all questions in this lesson, allow the students' responses to be explained to a partner, then to the class. Evidence is provided from the poem as relevant.

Select a girl and a boy to read the poem. Guide the students in the girl first reading the first stanza of *Girl on Land*. The boy reads the first stanza of *Boy at Sea* second. Continue in the same manner of reading.

Ask, "Who is speaking in the poem?"

Ask, "What is the purpose of the structure of the poems stanzas?"

Guide the students in discovering each element present in the poem. **Students provide specific proof from the poem to support their thoughts**. Reread the poem as a class or with a partner as needed. Record the examples on the board and/or on the BLM poetry vocabulary.

Elements present: metaphor (request examples), rhythm, repetition, imagery, mood

Ask, "What is the mood of the poem? What makes you think this? What methods do the authors use to create this mood?"

Say, "The next poem was written by an anonymous author. What does that mean?"

Guide the students in understanding anonymous is someone with an unknown name. Credit cannot be given to a specific person; however, credit is given that someone other than who printed the poem wrote it.

Say, "Look at this poem. Before we read it, what do you notice about it?" *(short, some rhyme, circles within the poem)*

Say, "I wonder what the significance of the circles might be. Let's read and find out."

Direct the students in reading the poem silently first. Second and third reading by volunteer students. The final reading by the entire class.

Ask, "What is the significance of the circles in this poem? *(represent bubbles of Hank sinking)* Who is Hank? What makes you think this? Who is speaking in the poem? How many stanzas are in this poem?" *(1)*

Guide the students in discovering each element present in the poem. **Students provide specific proof from the poem to support their thoughts**. Reread the poem as a class or with a partner as needed. Record the examples on the board and/or on the **BLM** Poetry Vocabulary.

Elements present: rhyme, rhythm, imagery, mood

Ask, "What is the mood of the poem? What makes you think this? What methods do the authors use to create this mood?"

Ask, "Why did Hank walk the plank? What does lark mean? What makes you think this?"

Say, "Lark has two meanings. The first is a ground dwelling song bird, but that wouldn't make sense here in this poem. Another meaning of lark is something done for fun, especially mischievous or daring."

Ask, "What is a prank? How do you know this? Where have you heard 'walk the plank' before?"

Say, "Tell your neighbor what happened to Hank. Why do you think this? Did Hank intend to sink?"

AFTER READING
Practice and Application – Vocabulary & Literature
Say, "When we read the introduction, the author of this book stated memorization is great for the brain. You and your partner will memorize the poem, 'Old Hank.' Practice reciting the poem as you look at one another."

Afterward students may read other poems from the anthology between pages 13 – 50 with their partner or group. Circulate the room and ask questions regarding the elements of poetry in the poems.

Transition to Math
Students will play Fraction-Decimal Memory Game A from Unit 4 Lesson 1. Review the game instructions with students and modify the level of difficulty as appropriate.

BLMs are provided in this unit for easy access. They are exact copies of the BLMs from Unit 4 Lesson 1. Please reuse previously made card set if available.

Practice and Application
Fractions and Decimal Memory A is played in the same way as the classic game. Modifications are provided on BLM Fraction-Decimal Memory Game A Directions.

QUESTIONS
- How do you know those cards are equivalent?
- Are there any cards that seem more difficult than the others? Why?
- Justify the relationship you used for this set.

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

ELPS (*English Language Proficiency Standard*)
1C, 2F, 2G, 3B, 3D, 3F, 4F

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.C.1., I.C.2., II.A.2., II.D.1.
MATH I.B.1.,IC.1., IIA..1., IV..A.1., IV.B.1., VI.B.1., VI. B.4.

Unit 5 Lesson 2 – Transition to Math
One per partner pair

Fraction-Decimal Memory Game A Directions

Materials:

- Full set of Fraction Decimal Cards A (54)

Procedure:

The object of the game is to correctly match as many equivalent fraction/decimal pairs as possible. Some cards are real world examples that can be represented with a fraction or decimal.

- Shuffle cards and arrange them face down in a 9 x 6 array.
- Player 1 flips over 2 cards.
    - Match – player keeps pair and takes another turn.
    - Mismatch – player flips cards back to original position. Turn ends.
- Player 2 repeats process.
- Player with the largest number of matched pairs by the end of class is the winner!

Modifications:

- Laminate the cards so they can write the fraction or decimal equivalent directly on them. This will prevent students from having to "figure it out" each time the card is flipped over. Students may also use their Equivalency Chart from the TV Lesson.
  **Only do this with groups that are struggling with the concept. It is important that the rest of the class practice the equivalencies each time.*

- Match three cards at one time using a relationship within the fractional part. This variation takes more thought because the student must justify the relationship between all three cards. Allow students to use sticky notes to label the set with the relationship. Make sure to stop by this group often and have them explain their thinking. If you notice this group continues to make simple connections such as "all three cards have one-fourth," nudge them to make bigger leaps. Technically, all cards are related since they are halves and fourths. Let them discover that, though.

Unit 5 Lesson 2 – Transition to Math
One per partner pair

Instrucciones del juego de la memoria A de Fracción Decimal

Materiales:

- Juego completo de Cartas A (54) de Fracción Decimal

Procedimiento:
El objetivo del juego es unir correctamente la mayor cantidad posible de pares de fracciones/decimales equivalentes. Algunas cartas son ejemplos del mundo real que se pueden representar con una fracción o un decimal.

- Mezcla las cartas y acomódalas con la cara hacia abajo en un orden de 9 x 6.
- El jugador 1 da vuelta 2 cartas.
    - Coincidencia - el jugador mantiene pares y tiene otro turno.
    - No coincidencia - el jugador vuelve a dar vuelta las cartas hacia la posición original. El turno termina.
- El jugador 2 repite el proceso.
- ¡El jugador con el mayor número de pares de coincidencias al final de la clase es el ganador!

Modificaciones:

- Lamine las cartas para que puedan escribir la fracción o el decimal equivalente directamente sobre ellas. Esto evitará que los estudiantes tengan que "descubrirlos" cada vez que se de vuelta la carta. Los estudiantes también pueden utilizar el Cuadro de equivalencias de la Lección TV.
  **Solo haga esto con aquellos grupos que tengan problemas con el concepto. Es importante que el resto de la clase practique las equivalencias cada vez.*

- Haga coincidir 3 cartas a la vez utilizando una relación dentro de la parte fraccional. Esta variación requiere mayor consideración porque el estudiante debe justificar la relación entre las 3 cartas. Permítale al estudiante utilizar notas adhesivas para etiquetar el juego con la relación. Asegúrese de hacer que este grupo se detenga a menudo y explique su razonamiento. Si usted nota que este grupo continúa haciendo conexiones simples, tales como "las 3 cartas tienen un cuarto", anímelos a dar saltos más grandes. Técnicamente, todas las cartas están relacionadas dado que son mitades y cuartos. Sin embargo, permítales descubrir esto a ellos.

Unit 5 Lesson 2 – Transition to Math
One per partner pair

Fraction-Decimal Memory Cards A (1/3)

30 mins	$\frac{1}{4}$	$\frac{3}{4}$	$1\frac{2}{4}$	1 lb 4 oz	$1\frac{3}{4}$
2 hrs 30 mins	$2\frac{1}{4}$	$2\frac{3}{4}$	$3\frac{2}{4}$	$3\frac{1}{4}$	3 hrs 45 mins
$4\frac{1}{2}$	$4\frac{1}{4}$	$4\frac{3}{4}$	5 ft 6 inches	$5\frac{1}{4}$	$5\frac{3}{4}$

Unit 5 Lesson 2 – Transition to Math
One per partner pair

Fraction-Decimal Memory Cards A (2/3)

$6\frac{1}{2}$	$6\frac{1}{4}$	$6\frac{3}{4}$	7 lbs 8 oz	$7\frac{1}{4}$	$7\frac{3}{4}$
8 hrs 45 mins	$8\frac{1}{4}$	$8\frac{3}{4}$	0.25	0.5	$0.75
1.250	$1.50	1.75	$2.25	2.50	2.750

Unit 5 Lesson 2 – Transition to Math
One per partner pair

Fraction-Decimal Memory Cards A (3/3)

$3.25	**3.5**	**3.750**	**4 ft 3 inches**	**4.50**	**4.750**
5.250	**5.5**	**$5.75**	**$6.25**	**6.50**	**6 lbs 12 oz**
7.250	**7.5**	**$7.75**	**8.25**	**$8.50**	**$8.75**

Materials
- **BLM** Me Hearty Vegetables

Math Vocabulary
fraction
ratio
decimal
percent
equivalent
scale factor
constant of proportionality
benchmark

Literature Vocabulary
metaphor
rhyme
rhythm
repetition
verse
alliteration
imagery
stanza
mood
anthology

ELPS (*English Language Proficiency Standard*)
1E, 1F, 2G, 2H, 3D, 3G, 4G, 5B, 5C

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.1., I.C.2., I.E.1., II.B.2.
ELA I.A.2., I.A.3., II.A.2., II.A.3., III.B.1., IV.A.1.
MATH I.B.1., I.C.1., II.A.1., II.C.1., IV.B.1., VIII.A.3., VIII.A.4.

Unit 5, Lesson 2 — Grades 5-6

TV Lesson

Math Objectives:
- Give examples of ratios as multiplicative comparisons of two quantities describing the same attribute.
- Give examples of rates as the comparison by division of two quantities having different attributes, including rates as quotients.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Building Background
Unit 5 is utilized as a review of all skills that will be assessed for both 5th and 6th grade. Teachers are to differentiate and modify lessons to meet the needs of their individual students to ensure they are prepared for the post-assessment.

Comprehensible Input
This problem set gives students the opportunity to review ratios and proportions through the various solution strategies learned in previous units.

Students will be given one problem situation and solve it using a constant of proportionality or covariant relationship, a scale factor or invariant relationship, the strategy for thinking in "groups of" or "chunking" groups to find an invariant or covariant, and simplifying the ratio.

Scale Factor (covariant)
"What do we know about this problem? What information is important?" *(Three crates of vegetables costs 15 doubloons and Captain Portio wants to buy 7 crates.)*

"How do you think we should solve this problem?" *(answers will vary)*

Students will follow along with the TV teacher and find a scale factor.

"Can we set up a ratio with this information?" *(Yes. Allow students to pick out their own proportional setup.)*

$$\frac{\textbf{15 doubloons}}{\textbf{3 crates}} = \frac{\textbf{x doubloons}}{\textbf{7 crates}}$$

"Does the scale factor appear to be a simple relationship?" *(No. Three to seven doesn't work out with equal groups of three.)*

"How many groups of three can we use to get to seven?" *(Two groups of three gets us to six.)*

"That only got us to six crates…we need seven. How many more do we need?" *(one more crate)*

"How can we relate one crate to a group of three crates, though? In other words, one crate is how much of a group of three crates?" *(It is one-third of a group of three.)*

"Let's look at our partials for a minute. How many groups of three do we need?" *(two whole groups)* "Plus how much of another group?" *(one-third of another group)*

"Do we know our scale factor?" *(Yes, scale factor is 'times $2\frac{1}{3}$.')*

$$\frac{\textbf{15 doubloons}}{\textbf{3 crates}} = \frac{\textbf{x doubloons}}{\textbf{7 crates}}$$

$\times 2\frac{1}{3}$

"Let's apply the scale factor to the doubloons. What is two groups of 15?" *(30 doubloons)*

"But what is one-third of a group of 15?" Allow students to discuss with an elbow partner or tablemates. *(Five is one-third of a group because there are three "chunks" of five in 15.)*

"Combine the partials." *(30 doubloons plus five doubloons equals 35 doubloons)*

"What does that tell us?" *(Captain will pay 35 doubloons for seven crates of vegetables.)*

Constant of Proportionality (invariant)

Follow the same process except with finding an invariant relationship.

$$\div 5 \quad \frac{\textbf{15 doubloons}}{\textbf{3 crates}} = \frac{\textbf{x doubloons}}{\textbf{7 crates}}$$

Students may find it easier to think "bottom to top" or three to 15 as an invariant of (x5) instead of (÷5). However, that is only as a mental math strategy. It is incorrect to say that the invariant relationship is (x5). It is only ($x \frac{1}{5}$) or (÷5).

"What number can I divide by five and get the answer seven?" *(35)*

If students want to think "bottom to top" the question would be; "Seven crates times five gives me?" *(35 doubloons)*

Simplify Ratio

Follow the same process *(either with an invariant or covariant relationship)* but first simplify the known ratio.

Original proportion: $\frac{\textbf{15 doubloons}}{\textbf{3 crates}} = \frac{\textbf{\textit{x} doubloons}}{\textbf{7 crates}}$

Discuss with students and find the relationship between 15 and three in order to simplify the ratio. *(both divisible by three)* Allow the use of a multiplication chart if needed.

New proportion: $\frac{\textbf{5 doubloons}}{\textbf{1 crate}} = \frac{\textbf{\textit{x} doubloons}}{\textbf{7 crates}}$

Continue solution process with either a covariant of (x7) or an invariant of (÷5). Again, students may use the mental math strategy of thinking "bottom to top" (x5) as a means of arriving at the answer. Reiterate that the invariant is always multiplicative from "top to bottom."

Pirate's Corner

Do you naturally lean toward an invariant or covariant relationship? Go to MAS Space and tell Captain Portio and the TV Teacher!

Objectives

Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 5 Lesson 2 – TV Lesson

Me Hearty Vegetables

Work with your teacher and peers to practice equivalent ratio strategies.

As Captain Portio's ship docked at the next port his cook decided it was time to buy the crew fresh vegetables for their meals. The nearest shopkeeper had this sign posted. At this rate, how much will it cost Captain to purchase 7 crates for the cook?

Fill in the table as you follow along with the TV Teacher.

Scale Factor (covariant)	Constant of Proportionality (invariant)	Simplify Known Ratio

How much will it cost to purchase 7 crates of vegetables? _____

Unit 5 Lesson 2 – TV Lesson

Mis vegetales sustanciosos

Colabora con tu maestro y tus compañeros para practicar estrategias de relaciones equivalentes.

Como el barco del Capitán Portio atracó en el puerto siguiente, su cocinero decidió que era hora de comprar vegetales frescos para las comidas de la tripulación. El almacenero más cercano había publicado este cartel. A esta tasa, ¿cuánto le costará al Capitán comprar 7 cajones para el cocinero?

Completa la tabla a medida que sigues al maestro de TV.

Factor de escala (covariable)	Constante de proporcionalidad (invariable)	Relación conocida simplificada

¿Cuánto costará comprar 7 cajones de vegetales? _____

Materials
- set of dominoes
- scratch paper
- 12x12 multiplication chart (optional)

All items listed above per partner pair.
- **BLM** Ridiculous Ratios Game Directions
- **BLM** Ridiculous Ratios Record Sheet

Math Vocabulary
fraction
ratio
decimal
percent
equivalent
scale factor
constant of proportionality
benchmark

Literature Vocabulary
metaphor
rhyme
rhythm
repetition
verse
alliteration
imagery
stanza
mood
anthology

ELPS (*English Language Proficiency Standard*)
1C, 2E, 2F, 23C, 3F, 3I, 4J, 5B

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.C.1., I.C.2., II.A.3., II.B.2.
ELA I.A.1., I.A.2., III.B.1., III.B.3., IV.A.3.
MATH I.B.1., I.C.1., II.B.2., VIII.A.1., VIII.A.3

Teacher Note
Unit 5 is utilized as a review of all skills that will be assessed for both 5th and 6th grade. Teachers are to differentiate and modify lessons to meet the needs of their individual students to ensure they are prepared for the post-assessment.

Unit 5, Lesson 2 — Grades 5-6

Follow-up

Math Objectives:
- Give examples of ratios as multiplicative comparisons of two quantities describing the same attribute.
- Give examples of rates as the comparison by division of two quantities having different attributes, including rates as quotients.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Students will play the game Ridiculous Ratios from Unit 3 Lesson 1. Review the game instructions with students and modify the level of difficulty as appropriate.

BLMs are provided in this unit for easy access. They are exact copies of the BLMs from Unit 3 Lesson 1.

Practice and Application
During the game Ridiculous Ratios dominoes with blanks represent unknowns. The game allows students a lot of freedom in how they set up equivalent ratios. It is imperative that the teacher checks for understanding and monitors groups. A 12x12 multiplication chart may be used, if necessary.

QUESTIONS
- Why did you choose to set up your ratios this way?
- What relationship did you use here, and did it cause you to set up your ratios this way?

Recursive Review
omitted

Writing Topics
Independent Writing Topic
Students will have a daily writing activity which will incorporate the day's focus math vocabulary.

- **Have your skills improved since the first time you played Ridiculous Ratios? Explain.**

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 5 Lesson 2 – Follow-up
One per partner pair

Ridiculous Ratios Game Directions

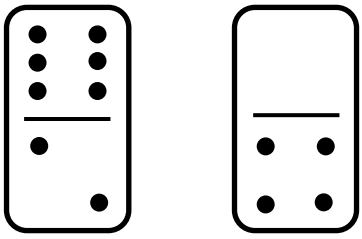
Materials:

- set of dominoes (blanks in separate pile)
- 12x12 multiplication chart (optional)
- **BLM** Ridiculous Ratios Record Sheet

Procedure:
The object of the game is to correctly solve for an unknown in an equivalent ratio situation to earn points and have the highest score when class ends.

- Separate all dominoes with "blanks" into a different pile. The "blanks" represent the unknowns. Lay dominoes face down in a single layer between players. (Should have two separate piles.)
- Player 1 chooses one domino from <u>each</u> pile and arranges them to create an equivalent ratio equation (proportion). The domino from the first pile represents the known ratio. Second domino represents the ratio with the unknown. (Look for easy relationships and compatible numbers to help you choose a setup.)
- Player 1 solves for the unknown on BLM. Player 2 uses scratch paper to verify answer.
  Correct: Solution for the unknown represents the number of points earned.
  Incorrect: Player receives one point (for effort).
- Play moves to Player 2. Repeat process.
- Highest score when class ends is the winner!

Ex:
Player 1 chooses dominoes 2:6 and blank:4.



Player 1 chooses this proportion because 2 and 4 are compatible with a scale factor of (x2) or double. 6 to 4 would not be as easy.

Both players set up the proportion $\frac{6}{2} = \frac{?}{4}$ and solve for the unknown.

Player 1 correctly answers 12 and earns 12 points.

Roles reverse and play continues with Player 2.

*Remember – There are different ways to set up equivalent ratios. Player 1 could have used several different setups still keeping the 2 to 4 relationship.

Unidad 5 Lección 2 – Seguimiento
1 por pareja de compañeros

Instrucciones del juego de Relaciones Ridículas

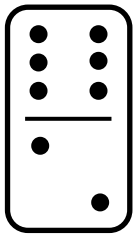
Materiales:

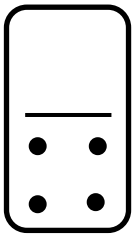
- juego de dominós (con los "ceros" en una pila separada)
- tabla de multiplicar de 12x12 (opcional)
- Hoja de registro de Relaciones Ridículas de **BLM**

Procedimiento:
El objetivo del juego es resolver correctamente para un valor desconocido en una situación de relación equivalente para ganar puntos y tener la puntuación más alta cuando termine la clase.

- Separa todos los dominós con "ceros" en una pila diferente. Los "ceros" representan los valores desconocidos. Coloca los dominós boca abajo en una sola capa entre los jugadores. (Debe haber 2 pilas distintas).
- El jugador 1 elige 1 dominó de cada pila y los acomoda para crear una ecuación de relación equivalente (proporción). El dominó de la primera pila representa la relación conocida. El segundo dominó representa la relación con el valor desconocido. (Busca relaciones sencillas y números compatibles para ayudarte a elegir una configuración).
- El jugador 1 resuelve para el valor desconocido en BLM. El jugador 2 usa papel borrador para verificar la respuesta.
  Correcto: La solución para el valor desconocido representa el número de puntos ganados.
  Incorrecto: El jugador recibe 1 punto (por su esfuerzo).
- El turno pasa al jugador 2. Repite el proceso.
- ¡Quien tenga más puntos al final de la clase es el ganador!

Ejemplo:
El jugador 1 elige los dominós 2:6 y cero:4





El jugador 1 elige esta proporción porque 2 y 4 son compatibles con un factor de escala de (x2) o el doble. 6 a 4 no sería tan fácil.

Ambos jugadores establecen la proporción $\frac{6}{2} = \frac{?}{4}$ y resuelven para el valor desconocido.

El jugador 1 responde correctamente 12 para ganar 12 puntos.

Los papeles se invierten y el juego continúa con el jugador 2.

*Recuerda – Hay diferentes maneras de configurar relaciones equivalentes. El jugador 1 podría haber usado varias configuraciones diferentes conservando la relación de 2 a 4.

Unit 5 Lessons 2 – Follow-up
One per partner pair

Ridiculous Ratios Record Sheet

Record work on this handout while playing game.

	Player 1 work	points	Player 2 work	points
Turn 1				
Turn 2				
Turn 3				
Turn 4				
Turn 5				
Turn 6				
Turn 7				
Turn 8				
Turn 9				
Turn 10				
Total Points				

Materials
- 4 graham crackers (1 sheet)
- 2 TBS Nutella

Allergy Warning – please substitute a different spread for the entire class if nut allergies are present.

- 3 large strawberries
- 2 paper dessert plates
- 2 paper towels
- 2 plastic knives

All items listed above per partner pair

- **BLM** Crackers and Nutella-Snack Fractions
- **BLM** Crackers and Nutella-Snack Fractions Teacher Guide

Math Vocabulary
fraction
ratio
decimal
percent
equivalent
scale factor
constant of proportionality
benchmark

Literature Vocabulary
metaphor
rhyme
rhythm
repetition
verse
alliteration
imagery
stanza
mood
anthology

Unit 5, Lesson 2 — Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents.
- Convert between fractions, decimals, and percents.
- Estimate to find solutions to problems involving fractions, decimals, and percents.

Language Objectives
- Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.

Snack Fractions
The Snack Fraction activities for this unit will focus on combining and separating fractional parts as well as dividing into fourths. A Teacher Guide for the BLM is provided.

One graham cracker sheet represents one whole. Three strawberries represent one whole.

QUESTIONS
- What is the whole in this situation?
- How do I break this up into equal shares?
- What does that fraction represent?
- Does this fraction have an easily calculated decimal equivalent?
- How can you find the decimal of this fraction?
- How did you calculate the percent?

Once the activity is complete, let them enjoy their snack!

Snack Fraction Journal Writing: BLM Crackers and Nutella-Snack Fractions
Describe any challenges you had during today's activity and how you were able to solve the problem.

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 5 Lesson 2 – Snack Fractions
One per student

Crackers and Nutella – Snack Fractions

Divide the snack equally between you and your partner. Work together to solve the problems.

1. Use the picture to model how you divided the Nutella between you and your partner.

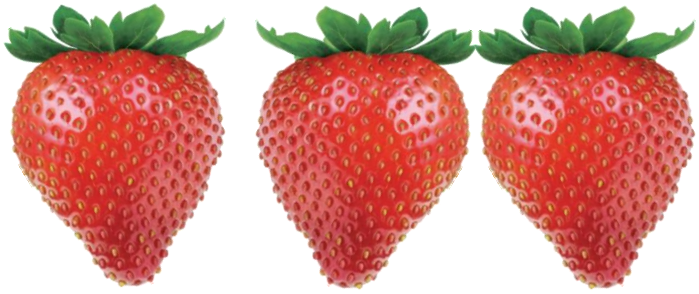
   your portion _____ TBS

   your portion _____ %

2. Use the picture to model how you divided the strawberries between you and your partner.

   your portion _____ fraction

   your portion _____ %



Two more friends joined the group. Answer the following questions.

3. Use the picture to model how you divided the Nutella between you and 3 partners.

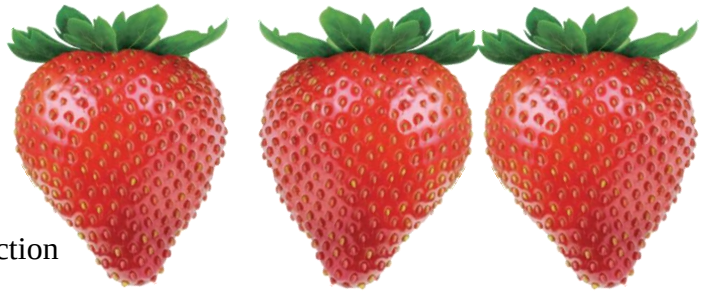
   your portion plus 2 friends _____ TBS

   your portion plus 2 friends _____ %

4. Use the picture to model how you divided the strawberries between you and your partner.

   your portion _____ fraction

   your portion plus 3 friends _____ fraction



Unit 5 Lesson 2 – Snack Fractions
One per student

Galletas y nutella - Fracciones de refrigerios

Divide los refrigerios de manera equitativa entre tú y tu compañero. Trabajen juntos para resolver los problemas.

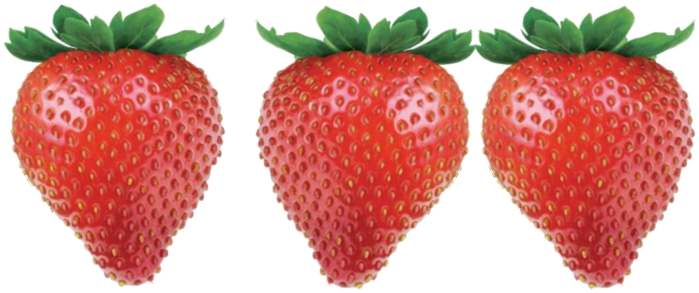
1. Usa la imagen para modelar cómo dividiste la Nutella entre tú y tu compañero.

   tu porción _____ CUCHARADA

   tu porción _____ %

2. Usa la imagen para modelar cómo dividiste las fresas entre tú y tu compañero.

   tu porción _____ fracción

   tu porción _____ %

Dos amigos más se unieron al grupo. Responde las siguientes preguntas.

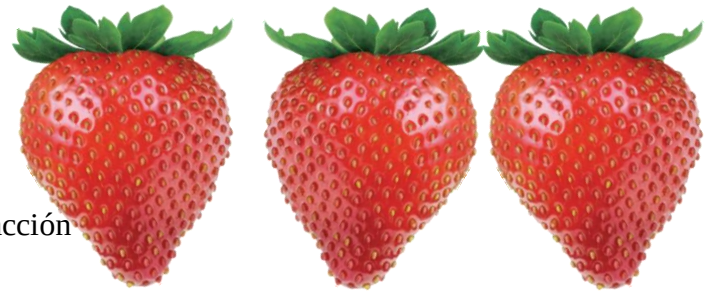
3. Usa la imagen para modelar cómo dividiste la Nutella entre tú y 3 compañeros.

   tu porción más la de 2 amigos _____ CUCHARADA

   tu porción más la de 2 amigos _____ %

5. Usa la imagen para modelar cómo dividiste las fresas entre tú y tu compañero.

   tu porción _____ fracción

   tu porción más la de 3 amigos _____ fracción

Unit 5 Lesson 2 – Snack Fractions **KEY**
One per student

Crackers and Nutella – Snack Fractions

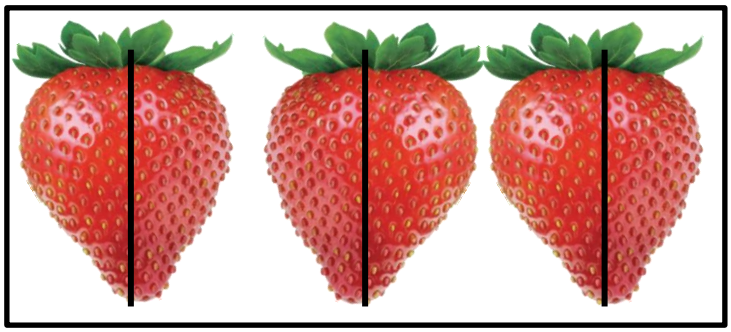
Divide the snack equally between you and your partner. Work together to solve the problems.

1. Use the picture to model how you divided the Nutella between you and your partner.

your portion 1 TBS

your portion 50 %

2. Use the picture to model how you divided the strawberries between you and your partner.



your portion $\frac{3}{6}$ fraction

your portion 50 %

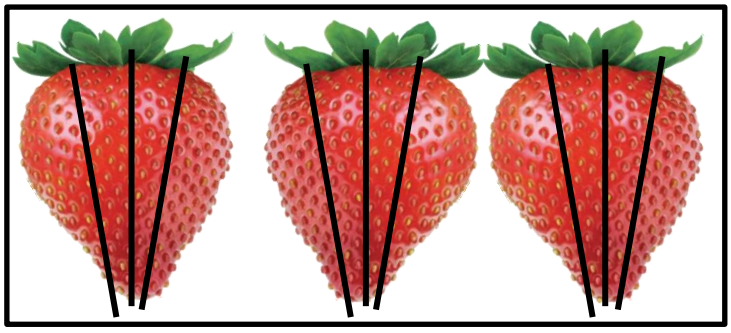
Two more friends joined the group. Answer the following questions.

3. Use the picture to model how you divided the Nutella between you and 3 partners.

your portion plus 2 friends $\frac{1}{2}+\frac{1}{2}+\frac{1}{2}=1\frac{1}{2}$ TBS

your portion plus 2 friends 75 %

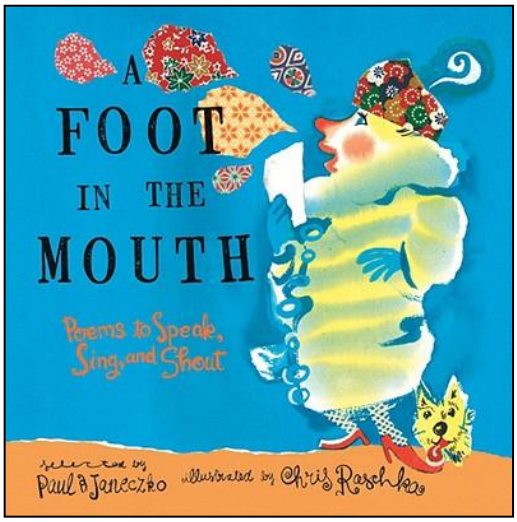
4. Use the picture to model how you divided the strawberries between you and your partner.



your portion $\frac{1}{12}+\frac{1}{12}+\frac{1}{12}=\frac{3}{12}$ fraction

your portion plus 3 friends $\frac{3}{12}+\frac{3}{12}+\frac{3}{12}+\frac{3}{12}=\frac{12}{12}$

Unit 5 Lesson 2 – Family Fun



Dear _____,

We read the poems *I Am Standing – Girl on Land, Boy at Sea* and *Old Hank* today during class.

We did another measurement lab with salt water and these are the math skills I used during the experiment…

_____

_____

_____

The best part about the lab was…

_____

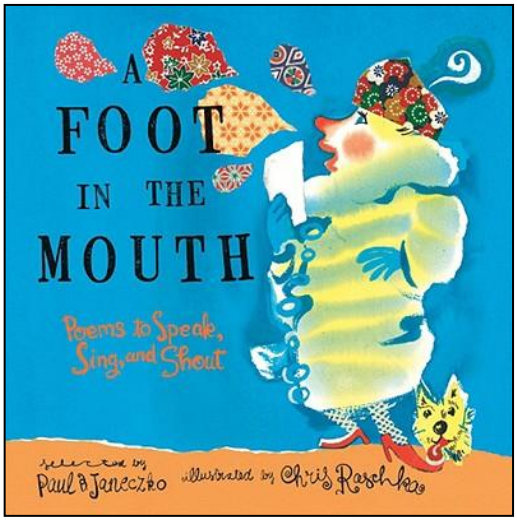
_____

_____

Sincerely,

_____

Unit 5 Lesson 2 – Family Fun



Querido _____,

Hoy, durante la clase, leímos los poemas *I Am Standing – Girl on Land, Boy at Sea y Old Hank.*

Hicimos otro laboratorio de medición con agua salada, y estas son las habilidades de matemáticas que usé durante el experimento...

_____
_____
_____

La mejor parte del laboratorio fue...

_____
_____
_____

Atentamente,

_____

Materials
- **BLM** Ghost Ship Teacher Instruction Page
- **BLM** Ghost Ship-Measurement Lab Record Sheet
- **BLM** Ghost Ship Pattern 1, 2, and 3 Instruction Page
- **BLM** Ghost Ship Pattern 1, 2, and 3 Visual Guide
- **BLM** Ghost Ship Teacher Guide
- **BLM** Ghost Ship Assembly Instructions
- **BLM** Fraction Action and *X* Marks the Spot
- **BLM** Lessons 1-3 CGI *A Foot In the Mouth*

Math Objectives
- Solve problems using a measurement tool and calculating measurements.
- Model and solve multistep word problems.
- Solve problems involving fractions, ratios, and proportions.
- Compose and decompose numbers.

Language Objectives
- Speak to partners, teacher, and class using vocabulary.
- Discuss problem solving process and strategies.

Math Vocabulary
fraction
ratio
decimal
percent
equivalent
scale factor
constant of proportionality
benchmark

Literature Vocabulary
metaphor
rhyme
rhythm
repetition
verse
alliteration
imagery
stanza
mood
anthology

Unit 5, Lesson 3 — Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post-assessment. They are not optional.

ESSENTIAL

Measurement Lab
- Lesson 1 – Argh Matey, *At Sea At Sea (6th assessment item 1,5,6)*
- Lesson 2 – Walk the Plank! (6th assessment item 1,5,6)
- **Lesson 3 – Ghost Ship (5th assessment item 1,2,3,4,5,6)**

Lesson 3 Materials
- pencil (per student)
- scissors (per student)
- tape measure (Pattern 2 pairs only)
- yard or meter stick (per pair)
- 22" x 28" colored poster board (per pair)
- masking or duct tape (per team)
- 1/4" x 12" dowel rod (per team)

Lesson 3 Student Groups
Students will calculate dimensions of pattern pieces to assemble a small ghost ship made of poster board. Please see BLM Ghost Ship Teacher Instruction Page for details of this activity. Solve It!, Fraction Action and *X* Marks the Spot problems have been omitted to accommodate the Measurement Lab Activity. Assessment items that were to be covered in those areas have been integrated into the Measurement Lab.

Solve It! Multi-step problem solving
- Lesson 1 - triads, 3-step (5th asmnt item 4, 5)
- Lesson 2 - triads, 3-step (6th asmnt item 4)
- Lesson 3 - **omit**

Fraction Action
- Lesson 1 – *(5th assessment item 1,2,3)*
- Lesson 2 – (5th assessment item 6)
- **Lesson 3 – omit**

***X* Marks the Spot**
- Lesson 1 – *(6th assessment item 8)*
- Lesson 2 – (6th assessment item 7)
- **Lesson 3 – (6th assessment item 4)**

Assessed TEKS for this Unit
5th – 5.3H, 5.3K
6th – 6.4C, 6.4D, 6.4E, 6.5B, 6.5C

ELPS (*English Language Proficiency Standard*)
2D, 2E, 2H, 3B, 3D, 3H, 4C

CCRS (*College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.1., I.C.2., I.C.3., II.A.4.
ELA II.A.2., II.A.3., II.B.1., III.B.1.,
MATH I.B.1., II.A.1., IV.A.1., VIII.A.3., VIII.A. 4.

Unit 5, Lesson 3 Grades 5-6

Daily Routine - continued

CGI

- Lesson 1 – Part-Part-Whole (5th assessment item 4)
- Lesson 2 – Compare Referent Unknown (5th assessment item 5)
- **Lesson 3 – Price Partitive Division (6th assessment item 6)**

The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.

OPTIONAL

Target Number

- Lesson 1 – *Target Number 10*
- Lesson 2 – Target Number 30
- **Lesson 3 – Target Number 60**

Money Matters

(*If you have a full program and wish to use this optional activity, you will find BLMs and Explanations on MAS Space.)*

Unit 5 Lesson 3 – Daily Routines – Measurement Lab
Teacher copy

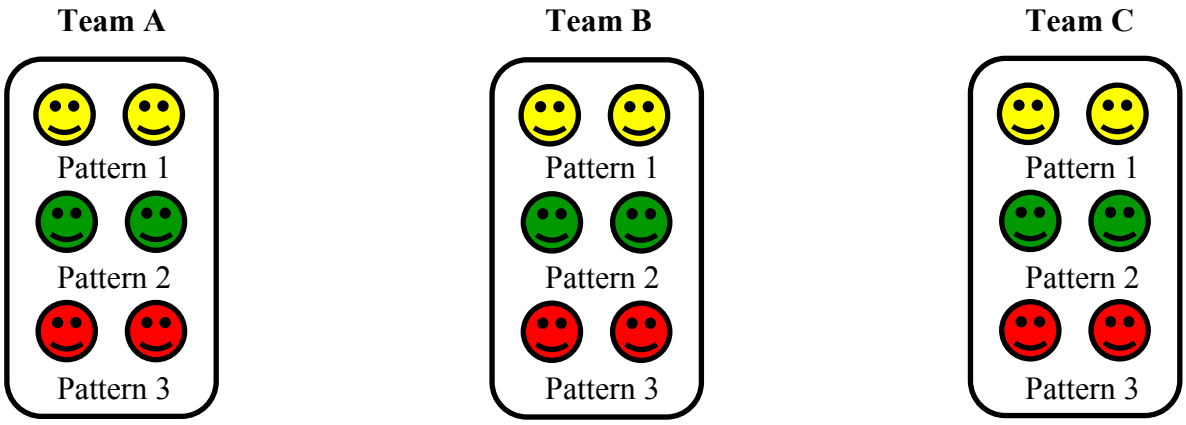
Ghost Ship Teacher Instruction Page

Materials:

- pencil (per student)
- scissors (per student)
- tape measure (Pattern 2 pairs only)
- yard or meter stick (per pair)
- 22” x 28” colored poster board (per pair)
- masking or duct tape (per team)
- 1/4” x 12” dowel rod (per team)

Instructions:

1. Divide class into TEAMS of six. Each team will assemble their own ghost ship. Each ghost ship is made out of three patterns.
2. Each TEAM is divided into three PAIRS. Each pair is responsible for one of the three patterns.
   Example: Class of nine.



3. Make sure each TEAM receives all of the appropriate “per team” materials and BLMs. Make sure each PAIR receives all of the appropriate “per pair” materials and BLMs.
4. Explain directions to the whole class and share a pre-made sample ghost ship.
5. Monitor groups as they work.
6. When all three PAIRS in a team complete their calculations and have all pattern pieces cut out correctly, give them the BLM Ghost Ship Assembly Directions and monitor teams while they start creating their ship.
7. Time permitting, allow TEAMS to decorate their ghost ships.

***All problems can be solved using compatible numbers, mental math strategies, partials, etc... Monitor groups to ensure they are not trudging through algorithmic steps.**

***Level of difficulty: Pattern 1 – high, Pattern 2 – medium, Pattern 3 – low**

Unit 5 Lesson 3 – Daily Routines – Measurement Lab
One per group

Ghost Ship – Measurement Lab Record Sheet

Record the length measurements in the chart below.

Side Panels								
Lines	$\overline{AB}$	$\overline{BC}$	$\overline{CD}$	$\overline{DE}$	$\overline{EF}$	$\overline{FG}$	$\overline{GH}$	$\overline{AH}$
Length			**6 in**	**5 in**	**free hand**		**free hand**	

Base					
Lines	$\overline{AC}$	$\overline{AB}$	$\overline{BC}$	$\overline{BD}$	$\overline{DA}$
Length					**27**

Deck				
Lines	$\overline{AB}$	$\overline{BC}$	$\overline{CD}$	$\overline{DE}$
Length				

Back Panel				
Lines	$\overline{AB}$	$\overline{BC}$	$\overline{CD}$	$\overline{DE}$
Length				

Unit 5 Lesson 3 – Daily Routines – Measurement Lab
One per group

Ghost Ship – Measurement Lab Record Sheet

Anota las medidas de longitude en la table a continuación.

Lados								
Líneas	$\overline{AB}$	$\overline{BC}$	$\overline{CD}$	$\overline{DE}$	$\overline{EF}$	$\overline{FG}$	$\overline{GH}$	$\overline{AH}$
Longitud			**6 in**	**5 in**	**A mano**		**A mano**	

Base					
Líneas	$\overline{AC}$	$\overline{AB}$	$\overline{BC}$	$\overline{BD}$	$\overline{DA}$
Longitud					**27**

Cubierta				
Líneas	$\overline{AB}$	$\overline{BC}$	$\overline{CD}$	$\overline{DE}$
Longitud				

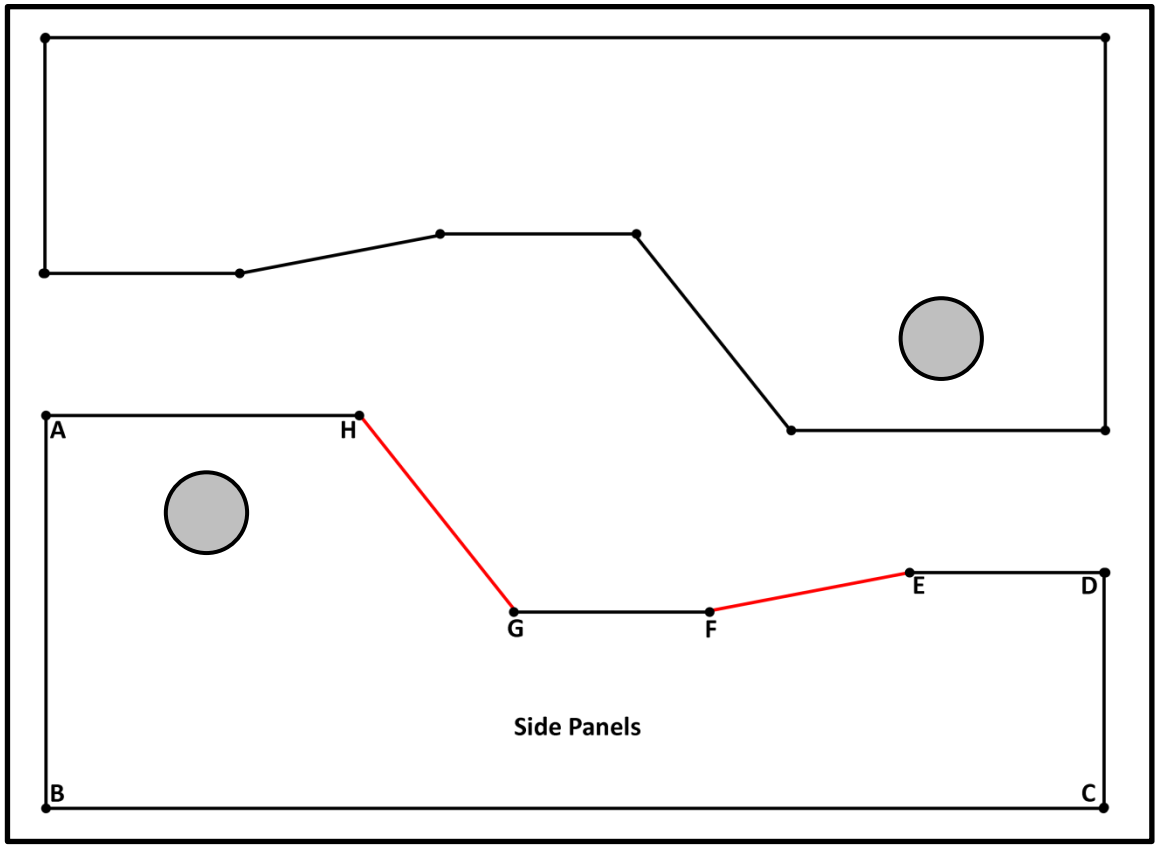
Panel trasero				
Líneas	$\overline{AB}$	$\overline{BC}$	$\overline{CD}$	$\overline{DE}$
Longitud				

Ghost Ship Pattern 1 Instruction Page

Instruction checklist:

- ☐ Use BLM Pattern 1-Visual Guide to calculate the unknown length measurements (blue).
- ☐ Record answers on BLM Ghost Ship-Measurement Lab Record Sheet.
- ☐ Using the new measurements and yard stick, sketch the SOLID BLACK LINES of the side panel pattern along the bottom of the poster board as shown in the picture.
- ☐ Connect point H to point G. (represented by red line)
- ☐ Connect point E to point F. (represented by red line)
- ☐ Cut out first side panel.
- ☐ Cut out gray circle window. Your choice of size.
- ☐ Use the first side panel as a pattern to trace the second side panel.
- ☐ Cut out second side panel including window.

Poster Board:



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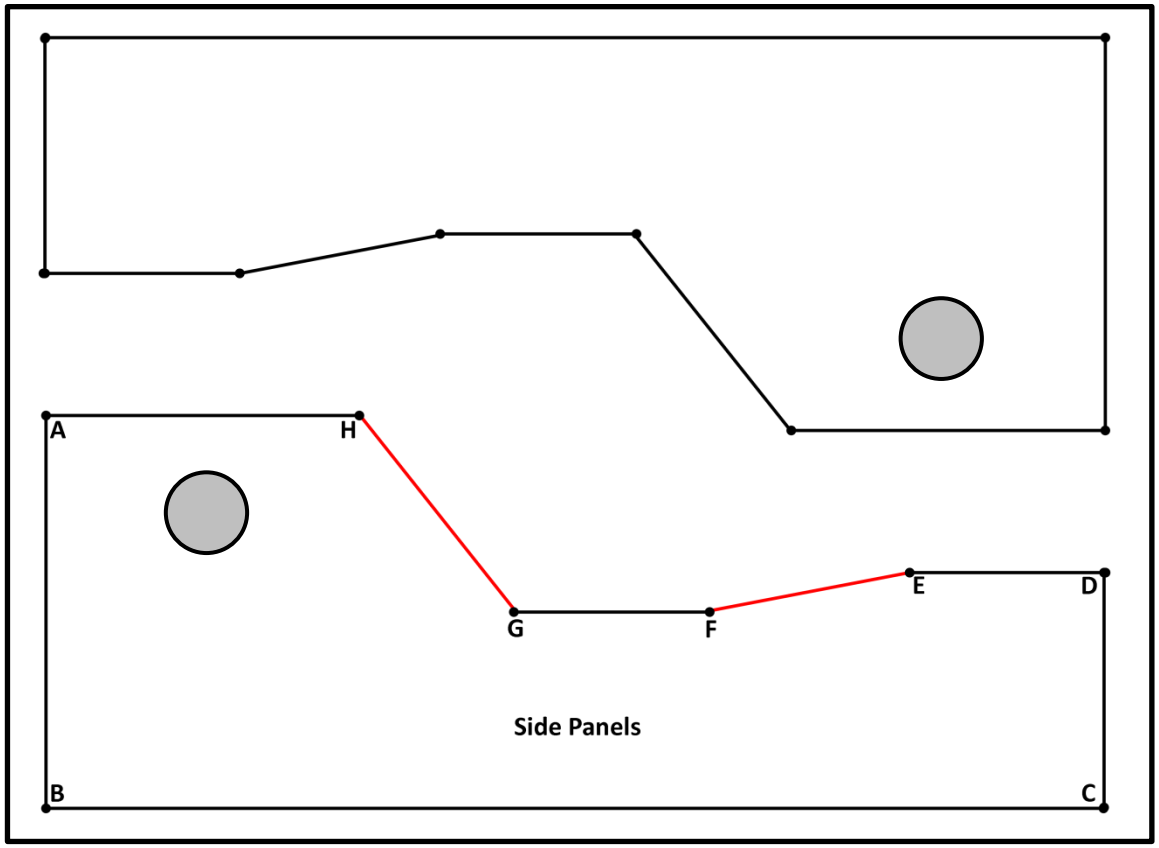
Página de instrucciones de Patrón 1 Barco Fantasma

Lista de verificación de instrucciones:

- ☐ Usa la Guía visual de Patrón 1 BLM para calcular las mediciones de longitud desconocidas (azul).
- ☐ Anota las respuestas en la Hoja de registro del laboratorio de medición del Barco Fantasma BLM.
- ☐ Usando el nuevo palo de mediciones y yardas, bosqueja las LÍNEAS NEGRAS SÓLIDAS del patrón del panel lateral junto con la parte inferior de la cartelera, como se muestra en la imagen.
- ☐ Conecta el punto H con el punto G. (representado por la línea roja)
- ☐ Conecta el punto E con el punto F. (representado por la línea roja)
- ☐ Recorta el primer panel lateral.
- ☐ Recorta la ventana circular gris. Tu elección de tamaño.
- ☐ Usa el primer panel lateral como patrón para trazar el segundo panel lateral.
- ☐ Recorta el segundo panel lateral, incluida la ventana.

Cartelera:



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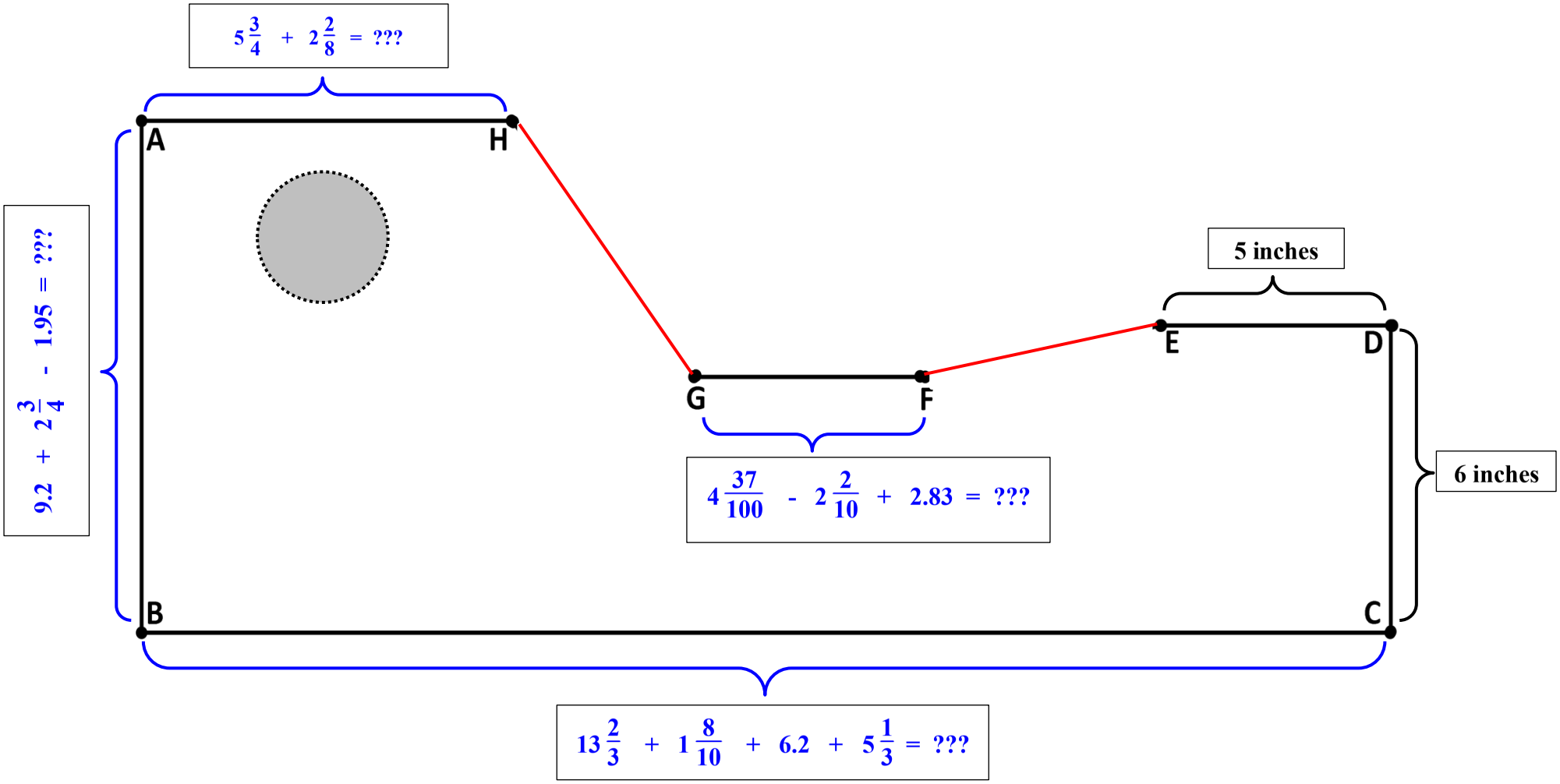
Unit 5 Lesson 3 – Daily Routines – Measurement Lab
One for pair #1

Ghost Ship Pattern 1 Visual Guide



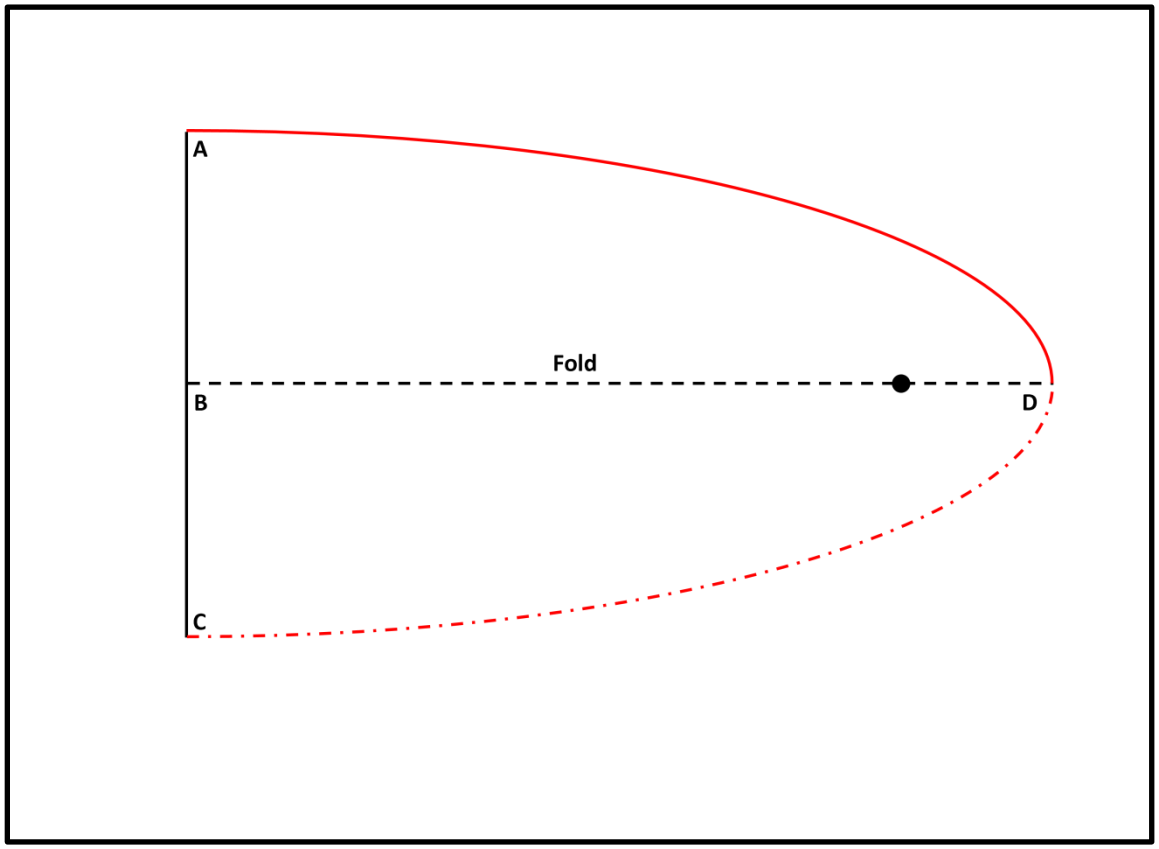
Unit 5 Lesson 3 – Daily Routines – Measurement Lab
One for pair #2

Ghost Ship Pattern 2 Instruction Page

Instruction checklist:

- ☐ Use BLM Pattern 2-Visual Guide to calculate the unknown length measurements (blue).
- ☐ Record answers on BLM Ghost Ship-Measurement Lab Record Sheet.
- ☐ Using the new measurements and yard stick, sketch the SOLID BLACK LINE and the DASHED BLACK LINE of the base pattern onto the poster board as shown in the picture.
- ☐ Use the tape measure to sketch the curved edge of the base (represented by a red line). **IT MUST BE CURVED AND 27 INCHES LONG.** Once you have a good curve and the length is 27 inches, use a pencil to HEAVILY color over the curved edge.
- ☐ Carefully FOLD along the DASHED BLACK LINE making sure the sketch is on the INSIDE of the fold.
- ☐ While folded, press down firmly where the curved edge is drawn to transfer the pencil lead onto the other side of the pattern.
- ☐ Unfold poster board. You should have a complete base pattern if the lead transferred correctly. Darken the line if needed. (represented by a dotted red line)
- ☐ Cut out base pattern along outside edges. Do NOT cut along the FOLD line.
- ☐ Mark the green dot. This is where the dowel rod will be placed for the flag.

Poster Board:



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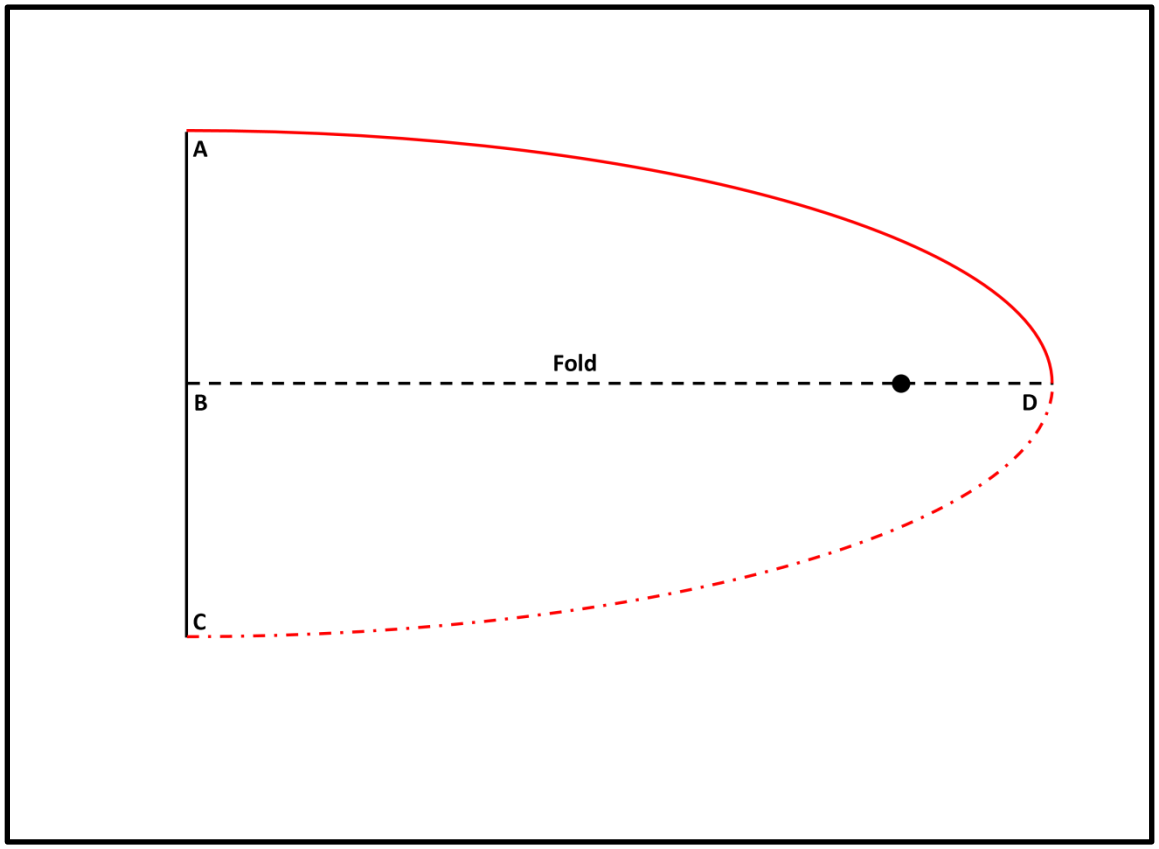
Unit 5 Lesson 3 – Daily Routines – Measurement Lab
One for pair #2

Ghost Ship Pattern 2 Instruction Page

Lista de verificación de instrucciones:

- ☐ Usa la Guía visual de Patrón 2 BLM para calcular las mediciones de longitud desconocidas (azul).
- ☐ Anota las respuestas en la Hoja de registro del laboratorio de medición del Barco Fantasma BLM.
- ☐ Usando el nuevo palo de mediciones y yardas, bosqueja la LÍNEA NEGRA SÓLIDA y la LÍNEA NEGRA DISCONTINUA del patrón base en la cartelera, como se muestra en la imagen.
- ☐ Usa la cinta métrica para bosquejar el borde curvo de la base (representado por una línea roja). **DEBE ESTAR CURVADO Y DEBE TENER 27 PULGADAS DE LARGO.** Una vez que hagas una buena curva y que la longitud sea de 27 pulgadas, usa un lápiz para remarcar FUERTEMENTE sobre el borde curvo.
- ☐ Con cuidado, PLIEGA a lo largo de la LÍNEA NEGRA DISCONTINUA asegurándote que el bosquejo quede en el INTERIOR del pliegue.
- ☐ Mientras está plegado, presiona con firmeza donde está dibujado el borde curvo para transferir la línea de lápiz hacia el otro lado del patrón.
- ☐ Despliega la cartelera. Deberías tener un patrón base completo si la línea se transfirió correctamente. De ser necesario, remarca la línea. (representada por una línea de puntos roja)
- ☐ Corta el patrón base a lo largo fuera de los bordes. NO cortes a lo largo de la línea de PLIEGUE.
- ☐ Marca el punto verde. Aquí es donde se colocará la varilla para la bandera.

Cartelera:



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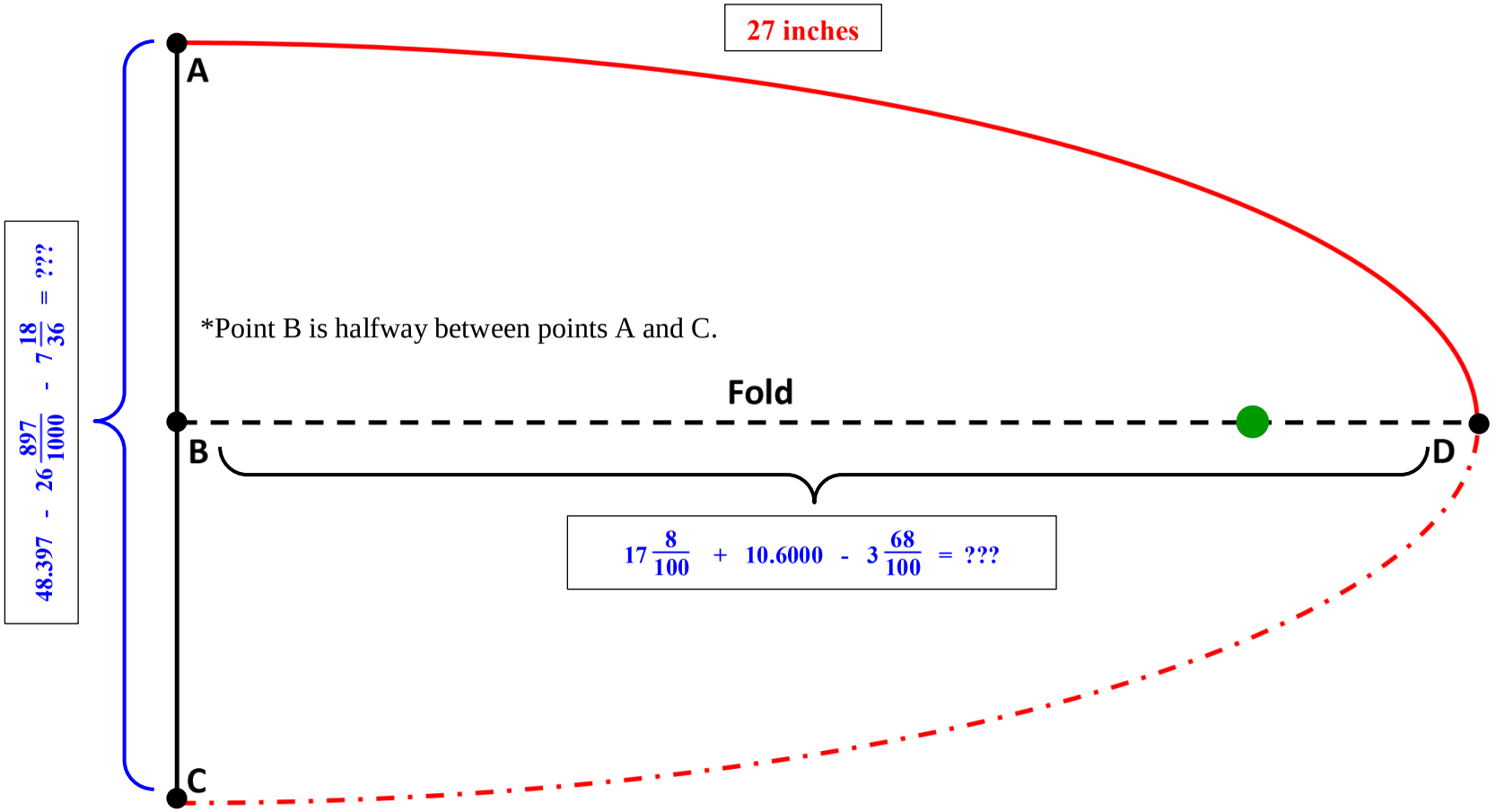
Ghost Ship Pattern 2 Visual Guide

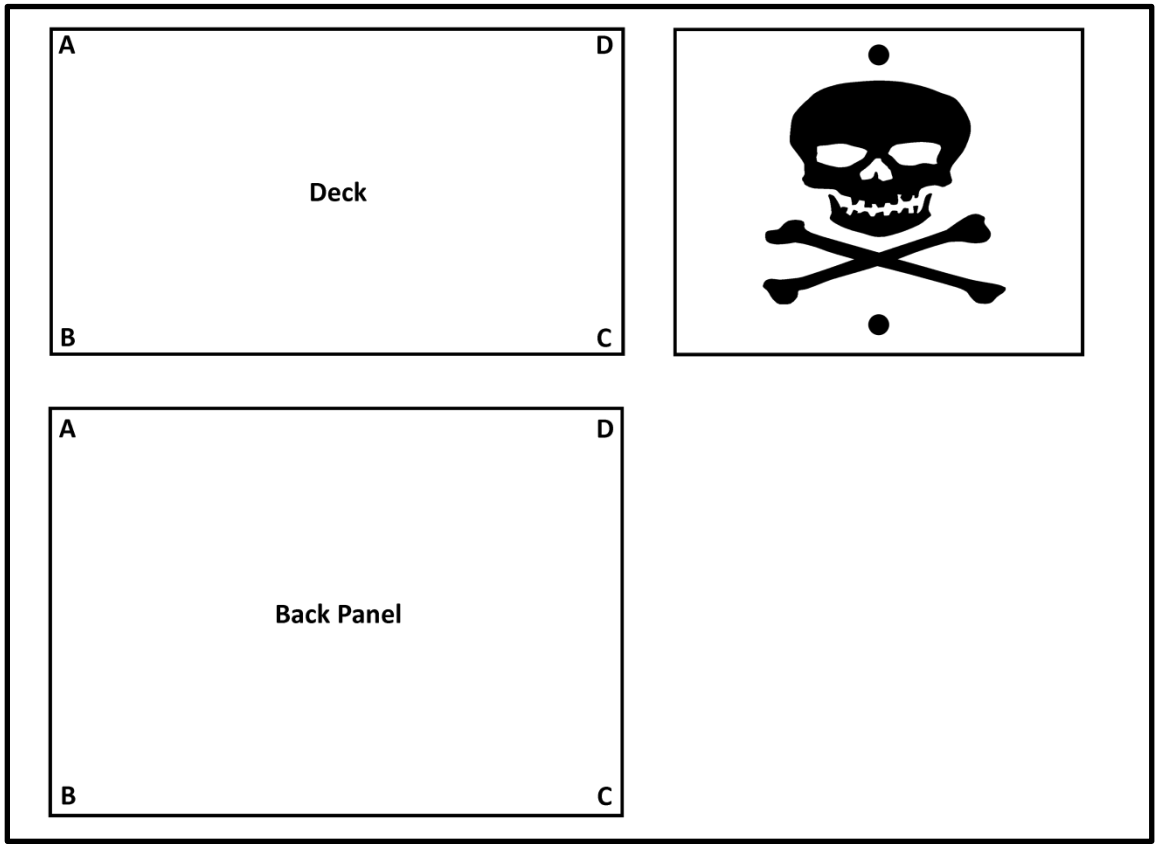


Ghost Ship Pattern 3 Instruction Page

Instruction checklist:

- ☐ Use BLM Pattern 3-Visual Guide to calculate the unknown length measurements (blue).
- ☐ Record answers on BLM Ghost Ship-Measurement Lab Record Sheet.
- ☐ Using the new measurements and yard stick, sketch the back panel and deck onto the poster board. Make sure they are both rectangles with 90° (right) corners.
- ☐ Create a team Pirate flag with dimensions 8”x10”. Make sure to leave room for the dowel rod to pole through the black dots.
- ☐ Cut out all three pattern pieces along outside edges.
- ☐ Use the sharp end a pencil to gently poke a hole through each of the black dots on the flag.
- ☐ Carefully insert the dowel rod through the holes and curve flag outward as if it is catching wind (as shown in picture).

Poster Board:



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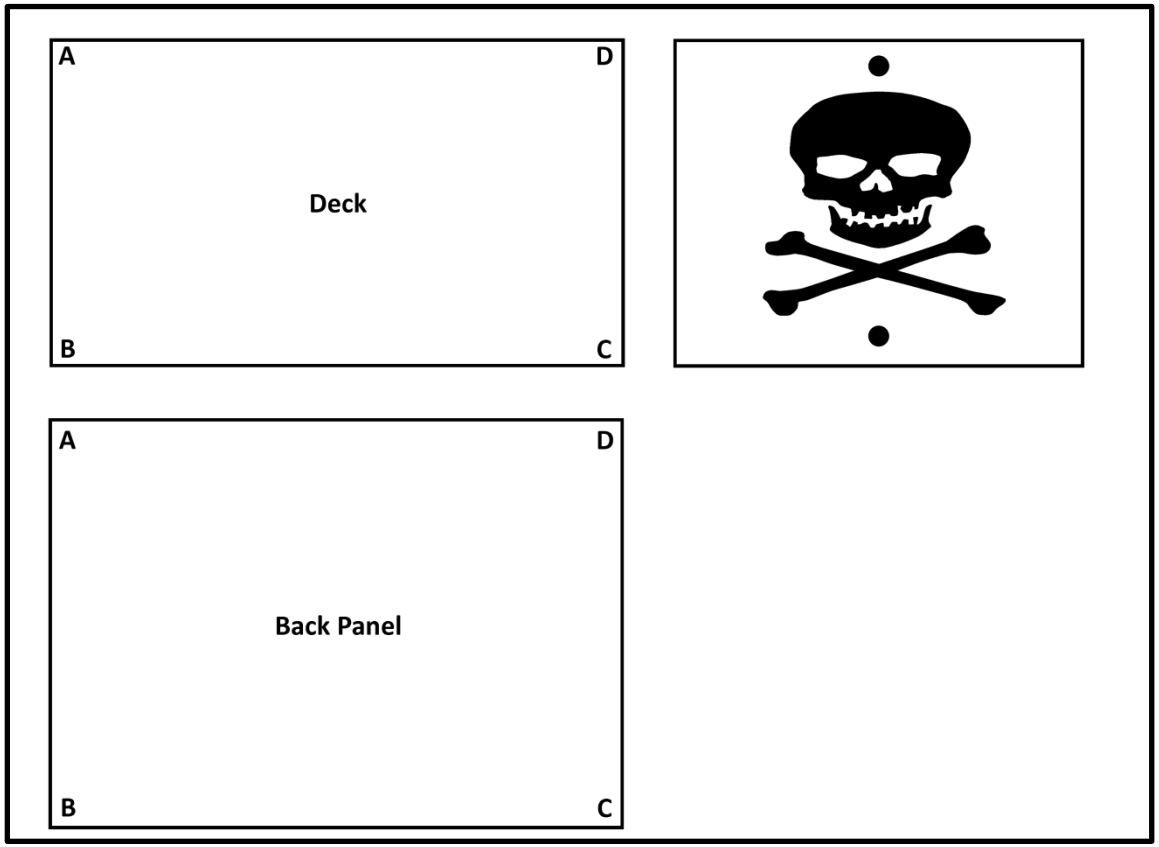
Unit 5 Lesson 3 – Daily Routines – Measurement Lab
One for pair #3

Ghost Ship Pattern 3 Instruction Page

Lista de verificación de instrucciones:

- ☐ Usa la Guía visual de Patrón 3 BLM para calcular las mediciones de longitud desconocidas (azul).
- ☐ Anota las respuestas en la Hoja de registro del laboratorio de medición del Barco Fantasma BLM.
- ☐ Usando el nuevo palo de mediciones y yardas, bosqueja el panel trasero y la cubierta en la cartelera. Asegúrate de que ambos sean rectángulos con esquinas de 90° (recto).
- ☐ Crea una bandera del equipo Pirata con dimensiones de 8”x10” Asegúrate de dejar espacio para la varilla para que pase a través de los puntos negros.
- ☐ Corta tres piezas del patrón a lo largo fuera de los bordes.
- ☐ Usa el extremo afilado de un lápiz para hacer un orificio a través de cada uno de los puntos negros en la bandera.
- ☐ Con cuidado, inserta la varilla a través de los orificios y curva la bandera hacia afuera como si estuviera flameando con el viento (como se muestra en la imagen).

Cartelera:



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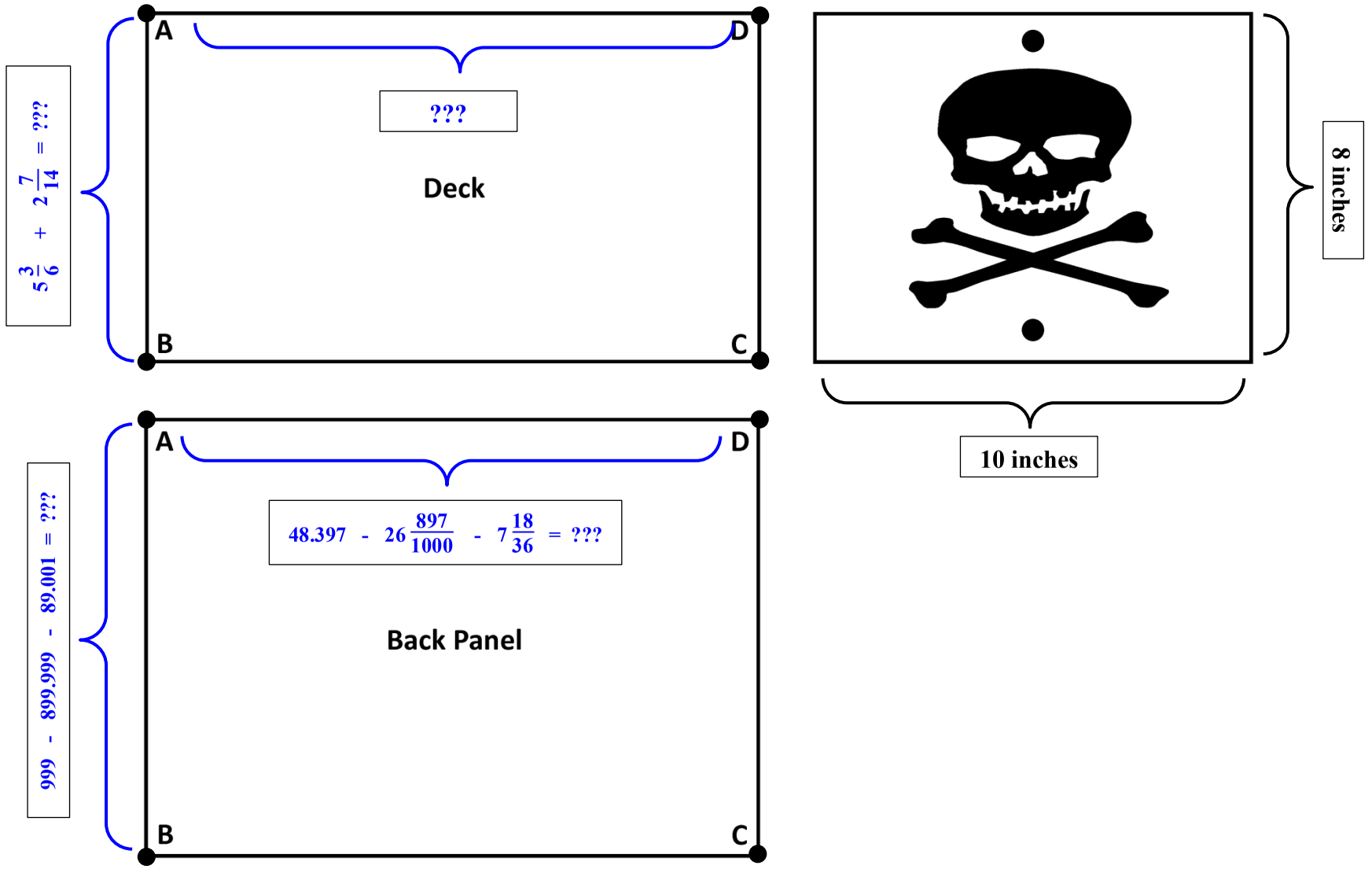
Unit 5 Lesson 3 – Daily Routines – Measurement Lab
One for pair #3

Ghost Ship Pattern 3 Visual Guide



Unit 5 Lesson 3 – Daily Routines – Measurement Lab
Teacher copy

Ghost Ship – Teacher Guide

Calculations for Pattern 1 measurements are shown below to model how students should use compatible number strategies to find solutions. Pattern 2 and 3 equations should be solved in the same fashion. There are a variety of ways to solve the problems. These are merely examples of possible solution strategies.

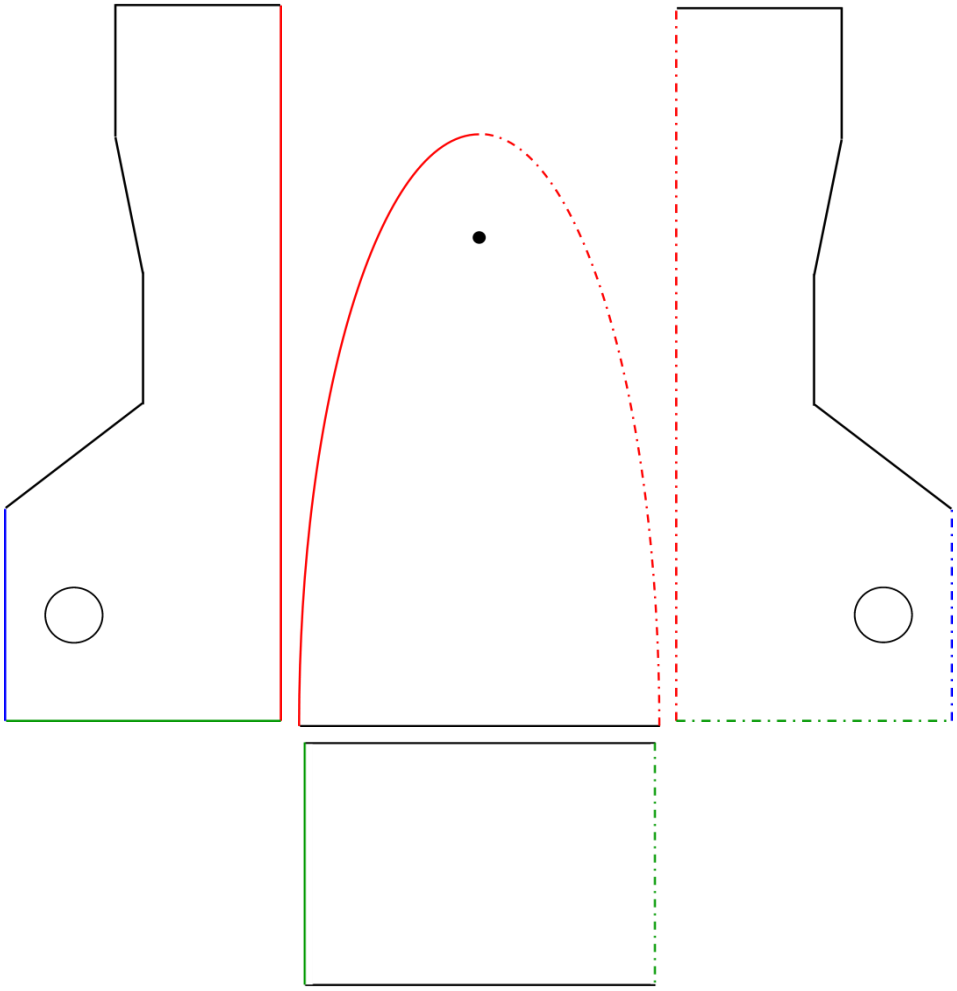
Pattern 1 – Possible Solution Strategies			
$\overline{AB}$	$\overline{BC}$	$\overline{FG}$	$\overline{AH}$
$6.15 + 2\frac{3}{4} - 1.95 + 3\frac{5}{100} =$	$13\frac{2}{3} + 1\frac{8}{10} + 6.2 + 5\frac{1}{3} =$	$4\frac{37}{100} - 2\frac{2}{10} + 2.83 =$	$5\frac{3}{4} + 2\frac{2}{8} =$
6.15 2.75 + 3.05 11.95 - 1.95 10 inches	$13\frac{2}{3} + 1\frac{8}{10} + 6\frac{2}{10} + 5\frac{1}{3} =$ 8 19 19 + 8 27 inches	4.37 + 2.83 7.20 - 2.20 5 inches	$5\frac{3}{4} + 2\frac{1}{4} = 8$ inches

Unit 5 Lesson 3 – Daily Routines – Measurement Lab
Teacher copy

Ghost Ship Assembly Instructions

1. Secure corresponding edges with tape.
2. Secure dowel rod flag with tape.
3. Deck lays across top of ship. Be sure to secure the edges with tape.

main ship assembly



Back Panel

flag

Materials
- **BLM I have…Who has…**
- **BLM** Fraction-Decimal Memory Game B Directions
- Fraction-Decimal Memory Cards B (3 pages)

Literature Selection
A Foot in the Mouth selected by Paul B. Janeczko
selection *Where Lizzie Lived* by Rebecca Kai Dotlich p.57

Math Vocabulary
fraction
4 Representations of a Fraction
decimal
benchmark
equivalent

Literature Vocabulary
metaphor
rhyme
rhythm
repetition
verse
alliteration
imagery
stanza
mood
anthology

ELPS (*English Language Proficiency Standard*)
1G, 2B, 2C, 3D, 4C, 4J, 4K

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., II.A.3., II.A.4., II.B.1., II.B.2.
ELA I. B.1., II.A.2., II.A.3., II.A.6., II.A.7., II.B.1., III.A.

Unit 5, Lesson 3 — Grades 5-6

Classroom Lesson

Everyday teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

Math Objectives:
- Use models to relate decimals to fractions.
- Generate equivalent forms of rational numbers including whole numbers, fractions, and decimals.

Language Objectives:
- Make inferences and draw conclusions about the structure and elements of poetry and provide evidence from text to support understanding.
- Analyze how poets use sound effects to reinforce meaning.
- Listen attentively to speakers, ask relevant questions, and make pertinent comments.
- Write poems using poetic techniques, figurative language, and graphic elements.

BEFORE READING
Building Background – Vocabulary & Literature

Say, "Today we are going to play a game to review rhyming. Distribute precut cards from BLM I Have Who Has to students. All students stand with their card(s) in hand. Begin with you *(Teacher)* reading the *(teacher)* card. Students respond with the word that rhymes on their card. Stop play when all cards are read and the teacher is again the last card read- only then read the, *I have…* statement.

Example:
Student 1:
"I have…
frog.
Who has…
slat?"

Student 2:
"I have…
cat.
Who has…
moon?"

Ask, "Have you ever heard a noise and not known what made the noise?" Allow students to share experiences.

Ask, "Have you ever found something in a manner that you, and no one else around, left it that way? Like a cabinet door open or drawer open."

Definitions:
metaphor (figure of speech) 3 syllables
a connection of two objects not usually connected
i.e. *love is a rose*

rhyme 1 syllable
two or more words which match in the same last sound
i.e. *cat bat*

rhythm 2 syllables (schwa before the /m/)
the beat or cadence of poetry

repetition 4 syllables
using a key word several times throughout a poem

verse (iambic pentameter) 1 syllable
has no rhyme but has rhythm

alliteration 5 syllables
two words in the same line with the same starting sound
i.e. *the price of the previous one*

imagery 4 syllables
pictures drawn in the reader's mind by the words of the poet

stanza 2 syllables
a paragraph in poetry, surrounded above and below by skipped lines

mood 1 syllable
the feeling of the reader of a poem.

anthology- noun, from Greek *anthologia*, from *anthos* 'flower' + -*logia* 'collection' (from *legein* 'gather'). In Greek, the word originally denoted a collection of the "flowers" of verse, i.e., small choice poems or epigrams, by various authors.
a book or other collection of selected writings by various authors

Classroom Lesson - continued

Ask, "Do you believe in spirits or ghosts? Why or why not?"

Say, "Today's poem is a haunted tale. Let's read and evaluate how the author's diction and tone set the mood for this haunting mood."

DURING READING
Comprehensible Input - Vocabulary & Literature
TEACHER NOTE: For all questions in this lesson, allow the students' responses to be explained to a partner, then to the class. Evidence is provided from the poem as relevant.

Allow time for the students to read the poem silently first. Then, allow several volunteers to read the poem aloud. Teacher reads the poem and pauses to play the sound effects. Sound effects may be created in PowerPoint or other multimedia.

https://www.freesound.org/

The website offers free sound effects upon search.

- squeaky door
- squeaky floor
- rocking chair
- spoon in cup
- wind chimes
- bell
- book opening

Guide the students in discovering each element present in the poem. **Students provide specific proof from the poem to support their thoughts.** Reread the poem as a class or with a partner as needed. Record the examples on the board and/or on the BLM poetry vocabulary.

Elements present: Rhyme, rhythm, imagery *(big time!)*, and mood

Ask, "How many stanzas are in this poem?" *(8 or 4, students provide reasoning for thoughts)*

Ask, "How is the mood created in this poem? What is the mood? What can you tell about the setting of this poem?"

Guide the students to reread the poem with their table and list all of the adjectives and verbs in two columns.
Discuss how word choice allowed the author to create the mood for this haunting tale.

Ask, "Who do you think Lizzie was? Why do you think this?"

AFTER READING

Practice and Application – Vocabulary & Literature

Say, "Today you have a choice of poetry writing. The poem you write may be structured after either: *I Am Standing- Girl on Land, Boy at Sea* or *Where Lizzie Lived*. Your poem must be a minimum of four stanzas, include rhyming, rhythm, and at least one metaphor. The mood should be easily portrayed to the reader through any method of your choice- setting, theme, tone, diction. Lastly, utilize your senses to create a vivid mind image for the reader. Begin with listing adjectives and verbs that relate to your topic. The topic of your poem is a reflection on your summer here in this class."

Example:

Structured as *I Am Standing…* students compare this year to last or this summer to during the school year.

Structured as *Where Lizzie Lived*, students describe what the classroom or other location in the school is like where they no longer are, but have signs of where they were.

Encourage advanced proficient students to write more than four stanzas. Less proficient may partner with someone if needed.

Allow time for students to edit with a peer or in a small group. Final drafts can be posted or read aloud.

Transition to Math

Students will play Fraction-Decimal Memory Game B from Unit 4 Lessons 2. Review the game instructions with students and modify the level of difficulty as appropriate. When students complete one game, they may move to the other.

BLMs are provided in this unit for easy access. They are exact copies of the BLMs from Unit 4 Lessons 2. Please reuse previously made card sets if available.

Practice and Application

Fractions-Decimal Memory Game B is played the same way as the classic game. Modifications are provided on BLM Fraction-Decimal Memory Game B Directions.

Unit 5, Lesson 3 — Grades 5-6
Classroom Lesson - continued

ELPS (*English Language Proficiency Standard*)
1C, 2F, 2G, 3B, 3D, 3F, 4F

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.C.1., I.C.2., II.A.2., II.D.1.
MATH I.B.1.,IC.1., IIA..1., IV..A.1., IV.B.1., VI.B.1., VI. B.4.

QUESTIONS

- How do you know those cards are equivalent?
- Are there any cards that seem more difficult than the others? Why?
- Justify the relationship you used for this set…

Objectives

Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 5 Lesson 3 – Classroom Lesson
One per student

(teacher) I have… DOG. Who has… SKY?	I have… DRY. Who has… TREES?	I have… BEES. Who has… RED?	I have… FED. Who has… FISH?
I have… WISH. Who has… SHOE?	I have… BLUE. Who has… STRING?	I have… FLING. Who has… BOX?	I have… SOCKS. Who has… THICK?
I have… STICK. Who has… HUM?	I have… CRUMB. Who has… MOOSE?	I have… LOOSE. Who has… CAR?	I have… STAR. Who has… PAPER?
I have… VAPOR. Who has… CHEESE?	I have… SNEEZE. Who has… LIGHT?	I have… SIGHT. Who has… FUR?	I have… STIR. Who has… HOUSE?
I have… MOUSE. Who has… BUNNY?	I have… SUNNY. Who has… WEATHER?	I have… FEATHER. Who has… FEEL?	I have… STEAL. Who has… FOG?

Unit 5 Lesson 3 – Follow-up
One per partner pair

Fraction-Decimal Memory Game B Directions

Materials:

- Full set of Fraction Decimal Cards B (40)

Procedure:
The object of the game is to correctly match as many equivalent fraction/decimal pairs as possible. Some cards are real world examples that can be represented with a fraction or decimal.

- Shuffle cards and arrange them face down in a 5x8 array.
- Player 1 flips over two cards.
    - Match – Player keeps pair and justifies the relationship on the BLM. Turn ends.
    - Mismatch – Player flips cards back to original position and justifies the non-relationship on the BLM. Turn ends.
- Player 2 repeats process.
- Player with the largest number of matched pairs by the end of class is the winner!

*Just like with any game, partner pairs may work together instead of as opponents. Understanding the relationships between the cards is the main focus. Having the highest number of matched pairs is NOT.

*Two of the Fraction-Decimal Cards reference "one full deck of cards." Please inform students that "a full deck" is 54 cards for this activity. 52 suited cards and two jokers.

Modifications:

- Laminate the cards so they can write the fraction or decimal equivalent directly on them. This will prevent students from having to "figure it out" each time the card is flipped over. Students may also use their Equivalency Chart from the TV Lesson.
  **Only do this with groups that are struggling with the concept. It is important that the rest of the class practice the equivalencies each time.*

- Match three cards at one time by finding a common relationship. Students must justify the relationship between all three cards on the BLM. Make sure to stop by this group often and have them explain their thinking. If you notice this group continues to make simple connections such as "all three cards have one-third," nudge them to make bigger leaps. Technically, all cards are related since they all stem from one-third. Let them discover that, though.

Unidad 5 Lección 3 – Seguimiento
5-6
1 por pareja de compañeros

Instrucciones del juego de la memoria B de Fracción Decimal

Materiales:

- Juego completo de Cartas B (40) de Fracción Decimal

Procedimiento:
El objetivo del juego es unir correctamente la mayor cantidad posible de pares de fracciones/decimales equivalentes. Algunas cartas son ejemplos del mundo real que se pueden representar con una fracción o un decimal.

- Mezcla las cartas y acomódalas con la cara hacia abajo en un orden de 5 x 8.
- El jugador 1 da vuelta 2 cartas.
    - Coincidencia - el jugador mantiene pares y justifica la relación en BLM. El turno termina.
    - No coincidencia - el jugador vuelve a dar vuelta las cartas hacia la posición original y justifica la inexistencia de relación en BLM. El turno termina.
- El jugador 2 repite el proceso.
- ¡El jugador con el mayor número de pares de coincidencias al final de la clase es el ganador!

*Al igual que en cualquier juego, los pares de compañeros pueden trabajar juntos en lugar de trabajar como oponentes. El enfoque principal es comprender las relaciones entre las cartas. NO lo es tener el mayor número de pares de coincidencias.

*Dos de las cartas de Fracción Decimal hacen referencia a "1 mazo de cartas completo". Infórmele a los estudiantes que "un mazo completo" consiste en 54 cartas para esta actividad. 52 cartas y 2 comodines.

Modificaciones:

- Lamine las cartas para que puedan escribir la fracción o el decimal equivalente directamente sobre ellas. Esto evitará que los estudiantes tengan que "descubrirlos" cada vez que se de vuelta la carta. Los estudiantes también pueden utilizar el Cuadro de equivalencias de la Lección TV.
  **Solo haga esto con aquellos grupos que tengan problemas con el concepto. Es importante que el resto de la clase practique las equivalencias cada vez.*

- Haga coincidir 3 cartas a la vez encontrando una relación común. Los estudiantes deben justificar la relación entre las 3 cartas en BLM. Asegúrese de hacer que este grupo se detenga a menudo y explique su razonamiento. Si usted nota que este grupo continúa haciendo conexiones simples, tales como "las 3 cartas tienen un tercio", anímelos a dar saltos más grandes. Técnicamente, todas las cartas están relacionadas dado que todas parten de un tercio. Sin embargo, permítales descubrir esto a ellos.

Unit 5 Lessons 3 – Transition to Math
One per partner pair

Fraction-Decimal Memory Cards B (1/2) **All cards on this page are equivalent to one-third*

1 foot out of a yard	**2 feet out of 2 yards**	**3 feet out of 9 yards**	**cracked 4 eggs in a dozen**	**sang 5 mins out of 15**
painted 6 out of 18	**missed 7 out of 21 shots**	**used 8 eggs in 2 dozen**	**caught 9 fish out of 27 bites**	**10 mins out of a half hour**
11 dogs with fleas out of 33	**paint 12 eggs out of 3 dozen**	**paid $1.30 out of $3.90**	**caught 14 out of 42 fireflies**	**studied 15 out of 45 mins**
boiled 16 eggs out of 4 dozen	**spent $0.17 out of $0.51**	**18 cards bent out of a full deck**	**saved $19.00 out of $57.00**	**20 mins of an hour**

Fraction-Decimal Memory Cards B (1/2) **All cards on this page are equivalent to one-third*

1 pie de una yarda	**2 de 2 yardas**	**3 pies de 9 yardas**	**rompió 4 huevos en una docena**	**cantó 5 mins de15**
pintó 6 de 18	**perdió 7 de 21 tiros**	**usó 8 huevos en 2 docenas**	**pescó 9 peces de 27 piques**	**10 mins de media hora**
11 perros con pulgas de 33	**pintó 12 huevos de 3 docenas**	**pagó $1.30 de $3.90**	**pescó 14 de 42 luciérnagas**	**estudió 15 de 45 mins**
hirvió 16 huevos 4 de docenas	**gastó $0.17 de $0.51**	**se doblaron 18 cartas de un mazo completo**	**Ahorró $19.00 de $57.00**	**20 mins de una hora**

Unit 5 Lessons 3 – Transition to Math
One per partner pair

Fraction-Decimal Memory Cards B (2/2) **All cards on this page are equivalent to two-thirds*

2 feet out of a yard	4 feet out of 2 yards	6 feet out of 9 yards	cracked 8 eggs in a dozen	sang 10 mins out of 15
painted a dozen out of 18	missed 14 out of 21 shots	used 16 eggs in 2 dozen	caught 18 fish out of 27 bites	20 mins out of a half hour
22 dogs with collars out of 33	paint 24 eggs out of 3 dozen	paid $2.60 out of $3.90	caught 28 out of 42 fireflies	studied 30 out of 45 mins
boiled 32 eggs out of 4 dozen	spent $0.34 out of $0.51	36 cards bent out of a full deck	saved $38.00 out of $57.00	40 mins of an hour

One per partner pair

Fraction-Decimal Memory Cards B (2/2) **All cards on this page are equivalent to two-thirds*

2 pies de una yarda	**4 pies de 2 yardas**	**6 pies de 9 yardas**	**rompió 8 huevos en una docena**	**Canto 10 mins de15**
Pinto una docena de 18	**faltó 14 de 21 tiros**	**usó 16 huevos en 2 docenas**	**pescó 18 peces de 27 picaduras**	**20 mins de media hora**
22 perros con collares de 33	**Pinto 24 huevos de 3 docenas**	**pagó $2.60 de $3.90**	**atrapó 28 de 42 luciérnagas**	**estudió 30 de 45 mins**
hirvió 32 huevos de 4 docenas	**Gastó $0.34 de $0.51**	**se doblaron 36 cartas de un mazo completo**	**Ahorró $38.00 de $57.00**	**40 mins de una hora**

Materials
- **BLM** Ghostly Encounters

Math Vocabulary
fraction
ratio
decimal
percent
equivalent
scale factor
constant of proportionality
benchmark

Literature Vocabulary
metaphor
rhyme
rhythm
repetition
verse
alliteration
imagery
stanza
mood
anthology

ELPS (*English Language Proficiency Standard*)
1E, 1F, 2G, 2H, 3D, 3G, 4G, 5B, 5C

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.B.1., I.C.1., I.C.2., I.E.1., II.B.2.
ELA I.A.2., I.A.3., II.A.2., II.A.3., III.B.1., IV.A.1.
MATH I.B.1., I.C.1., II.A.1., II.C.1., IV.B.1., VIII.A.3., VIII.A.4.

Unit 5, Lesson 3 — Grades 5-6

TV Lesson

Math Objectives:
- Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Building Background
Ghostly encounters seem to be on the rise these days. The percentage of people who claim to have seen a ghost *(or had a supernatural experience)* has steadily increased over the past few years.

Comprehensible Input
Students will solve three different percent situations in this lesson. Each problem highlights a different structure where the unknown changes position in the equation. Each problem should be solved using mental math strategies and compatible numbers.

General equation: % x whole = part

Part unknown: % x whole = [?]

Whole unknown: % x [?] = part

Percent unknown: [?] x whole = part

Each equation can be solved using a bar model or strip diagram.

Part Unknown

Equation: % x whole = [?]

Percent = 20%

Part = [?]

Whole = 313.9 million people in the USA

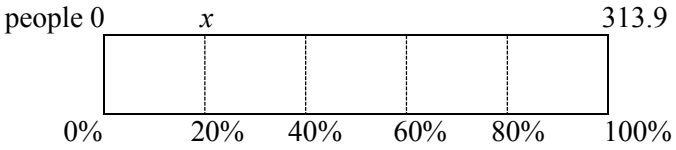
New equation: 20% of 313.9 million people = [what?]

Set up a bar model with students, but allow them to lead the way through the solution process.

"People" are measured in millions for this bar.

Students may divide the bar into "chunks" of 20% (five times) or by "chunks" of 10%.

Monitor students as they choose how to divide the bar. This example will demonstrate sections of 20%.



Even though the bar is not divided into 10's, students will still need to find 10% of the population. Once 10% is established, 20% is solved easily.

10% of 313.9 million = 31.39 million. Now double the amount.

31.39 million people doubled = 62.78 million

20 % = 62.78 million

"What does that answer tell us?" *(62.78 million people claim they have had a ghostly encounter.)*

Whole Unknown

Equation: % x [?] = part

Percent = 25%

Part = 11 million people in the UK

Whole = [?]

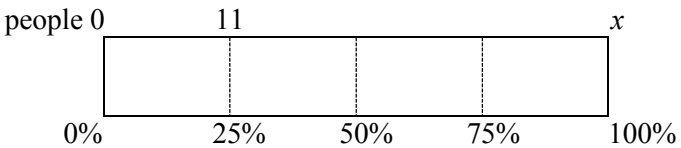
New equation: 25% of [what?] = 11 million people

Set up a bar model with students, but allow them to lead the way through the solution process.

"People" are measured in millions for this bar.

Students may divide the bar into "chunks" of 20% (five times) or by "chunks" of 10%.

Have students label their benchmarks and known information.



"What do 11 million people represent? What percent?" *(25 %)*

25% = 11 million people

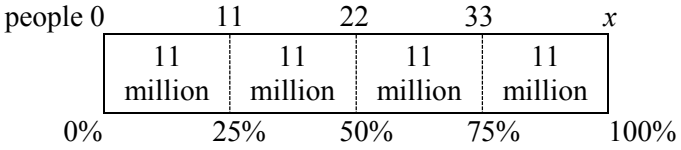
"What do we know about 25%? Why is this number easy to work with?" *(25 is one-fourth of 100%)*

Allow partners and groups to discuss how they will relate all of the numbers on the bar model to help them solve the problem.

25% = 11 million people

25% x 4 = 100%

Therefore, every "chunk" of 25 is the same as 11 million people. If it takes four "25's" to get 100%, then that's the same as saying it will take four "11 millions." Label bar model.



"What does that answer tell us?" *(The population of the UK is 44 million people.)*

Percent Unknown

Equation: [?] x whole = part

Percent = [?]

Part = 9 crew members lost at sea

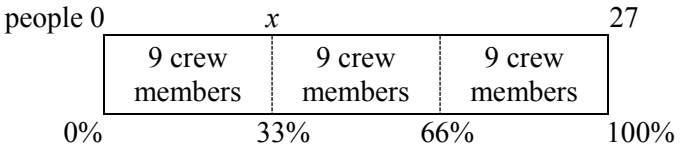
Whole = 27 crew members

New equation: [what %?] of 27 = 9

Set up a bar model with students, but allow them to lead the way through the problem. "People" are measured in millions for this bar.

Ask students to discuss the relationship between 9 and 27 with their group mates. Once they have established 9 is one-third of 27 they may begin their bar model.

Have students label their benchmarks and known information.



"What does that answer tell us?" *(That nine crew members lost at sea represents 33% of the entire crew.)*

Pirate's Corner
Have you ever had a ghostly encounter?!?! Captain Portio and the TV Teacher want to hear your stories! Go to MAS Space and try to scare us!

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Ghostly Encounters

Work with your teacher and in groups to solve the problems using bar models/strip diagrams.

1. Ghostly encounters and supernatural experiences are on the rise! Nearly 20% of the US population has claimed they saw a ghost. The population of the US is about 313.9 million people. How many people claim to have seen a ghost?

2. It isn't just the US that sees a climb in ghost sightings. A quarter, or 11 million people, of the UK's population claims they have had contact with the supernatural. What is the total population of the UK?

3. The Flying Dutchman is the most famous ghost ship in the world. When it first set sail the crew consisted of 27 members. Before the Flying Dutchman met its demise it lost 9 of its crew members to the sea. What percentage of the crew was lost?

Unidad 5 Lección 3 – Lección TV

Encuentros fantasmales

Colabora con tu maestro y en grupos para resolver los problemas usando modelos de barra/diagramas de franjas.

1. ¡Los encuentros fantasmales y las experiencias sobrenaturales están en aumento! Cerca del 20% de la población estadounidense afirma que ha visto un fantasma. La población de EE. UU. es de aproximadamente 313.9 millones de personas. ¿Cuántas personas afirman haber visto un fantasma?

2. No solo en EE. UU. se observó un aumento en las visiones de fantasmas. Un cuarto, u 11 millones de personas, de la población del Reino Unido afirma haber tenido contacto con lo sobrenatural. ¿Cuál es la población total del Reino Unido?

3. El Holandés Volador es el barco fantasma más famoso del mundo. Cuando zarpó por primera vez, su tripulación constaba de 27 miembros. Antes de que el Holandés Volador desapareciera, perdió 9 miembros de su tripulación en el mar. ¿Qué porcentaje de la tripulación se perdió?

Materials
- Family Fun Generic Game Board
- Family Fun Movement Cards
- Unit 5 Family Fun Problem Cards for grades 5-6 (yellow)
- Family Fun Answer Key for Unit 5 (all grade bands)
- Unit 5 Family Fun Special 5th – 6th Game Instructions
- game markers

Math Vocabulary
fraction
ratio
decimal
percent
equivalent
scale factor
constant of proportionality
benchmark

Literature Vocabulary
metaphor
rhyme
rhythm
repetition
verse
alliteration
imagery
stanza
mood
anthology

ELPS (*English Language Proficiency Standard*)
1C, 2E, 2F, 23C, 3F, 3I, 4J, 5B

CCRS *(College and Career Readiness Standards)*
CROSS-CURRICULAR I.A.1., I.C.1., I.C.2., II.A.3., II.B.2.
ELA I.A.1., I.A.2., III.B.1., III.B.3., IV.A.3.
MATH I.B.1., I.C.1., II.B.2., VIII.A.1., VIII.A.3

Unit 5, Lesson 3 — Grades 5-6
Follow-up

Math Objectives:
- Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.
- Use addition and subtraction to solve problems involving whole numbers and decimals.
- Add and subtract positive rational numbers fluently.
- Use ratios to describe proportional situations.
- Solve real world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole including the use of concrete and pictorial models.
- Represent ratios and percents with concrete models, fractions, and decimals.
- Use ratios to make predictions in proportional situations.

Language Objectives:
- Discuss problem solving strategies with peers.
- Write out solutions for solving problems.
- Justify their thinking and strategies.

Practice and Application
Allow students to use this time to complete the problems from the TV Lesson. It is imperative, however, that they learn and play the Unit 5 Family Fun Game. Like previous units the game reviews all objectives covered on the assessments for 5th and 6th grade.

Recursive Review
omitted

Writing Topics
Independent Writing Topic
Students will have a daily writing activity which will incorporate the day's focus math vocabulary.

- **Explain the difference between a linear and an area model.**

Objectives
Review the math and language objectives to make sure that they were accomplished and that the students realize how they were accomplished.

Materials
- 1 large bagel
- 4 TBS cream cheese
- 2 paper dessert plates
- 2 paper towels
- 2 plastic knives

All items listed above per partner pair
- **BLM** Bagels and Cream Cheese-Snack Fractions 1 per student
- **BLM** Bagels and Cream Cheese-Snack Fractions Teacher Guide

Math Vocabulary
fraction
ratio
decimal
percent
equivalent
scale factor
constant of proportionality
benchmark

Literature Vocabulary
metaphor
rhyme
rhythm
repetition
verse
alliteration
imagery
stanza
mood
anthology

Unit 5, Lesson 3 — Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents.
- Convert between fractions, decimals, and percents.
- Estimate to find solutions to problems involving fractions, decimals, and percents.

Language Objectives
- Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.

Snack Fractions
The Snack Fraction activities for this unit will focus on combining and separating fractional parts as well as dividing into fourths. A Teacher Guide for the BLM is provided.

One large bagel represents one whole.
Four TBS of cream cheese represent one whole.

QUESTIONS
- What is the whole in this situation?
- How do I break this up into equal shares?
- What does that fraction represent?
- Does this fraction have an easily calculated decimal equivalent?
- How can you find the decimal of this fraction?
- How did you calculate the percent?

Once the activity is complete, let them enjoy their snack!

Snack Fraction Journal Writing: BLM Bagels and cream Cheese
Explain how all of the ratios in problem 1 relate to the original ratio of 1 to 2.

Objectives: Review the objectives with the class, making sure they understand how they achieved each.

Unit 5 Lesson 3 – Snack Fractions
One per student

Raisin Bread and Banana – Snack Fractions

Divide the snack equally between you and your partner. Work together to solve the problems.

1. If 1 bagel produces 2 servings, write the following ratios:

1 bagel : _____ servings	_____ bagels : 6 servings
4 bagels : _____ servings	_____ bagels : 10 servings
2 bagels : _____ servings	_____ bagels : 12 servings
10 bagels : _____ servings	_____ bagels : 16 servings

2. If the ratio of TBS of cream cheese to servings is 4:2, write the following ratios:

1 TBS : _____ servings	_____ TBS : 6 servings
2 TBS : _____ servings	_____ TBS : 8 servings
6 TBS : _____ servings	_____ TBS : 10 servings
8 TBS : _____ servings	_____ TBS : 12 servings

You may use the space below to show your work and/or draw visuals to help solve the problems.

Pan de pasas y plátanos - Fracciones de refrigerios

Divide los refrigerios de manera equitativa entre tú y tu compañero. Trabajen juntos para resolver los problemas.

3. Si una rosquilla rinde 2 porciones, escribe las siguientes relaciones:

1 rosquilla: _____ porciones	_____ rosquillas : 6 porciones
4 rosquillas: _____ porciones	_____ rosquillas : 10 porciones
2 rosquillas: _____ porciones	_____ rosquillas : 12 porciones
10 rosquillas: _____ porciones	_____ rosquillas : 16 porciones

4. Si la relación de una CUCHARADA de queso crema a las porciones es 4:2, escribe las siguientes relaciones:

1 CUCHARADA : _____ porciones	_____ CUCHARADAS : 6 porciones
2 CUCHARADAS : _____ porciones	_____ CUCHARADAS : 8 porciones
6 CUCHARADAS : _____ porciones	_____ CUCHARADAS : 10 porciones
8 CUCHARADAS : _____ porciones	_____ CUCHARADAS : 12 porciones

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Puedes utilizar el siguiente espacio para mostrar tu trabajo o hacer dibujos para ayudarte a resolver los problemas.

Raisin Bread and Banana – Snack Fractions

Divide the snack equally between you and your partner. Work together to solve the problems.

1. If 1 bagel produces 2 servings, write the following ratios: This is a classic example of a 1 to 2 ratio. Servings are DOUBLE the amount of bagels.

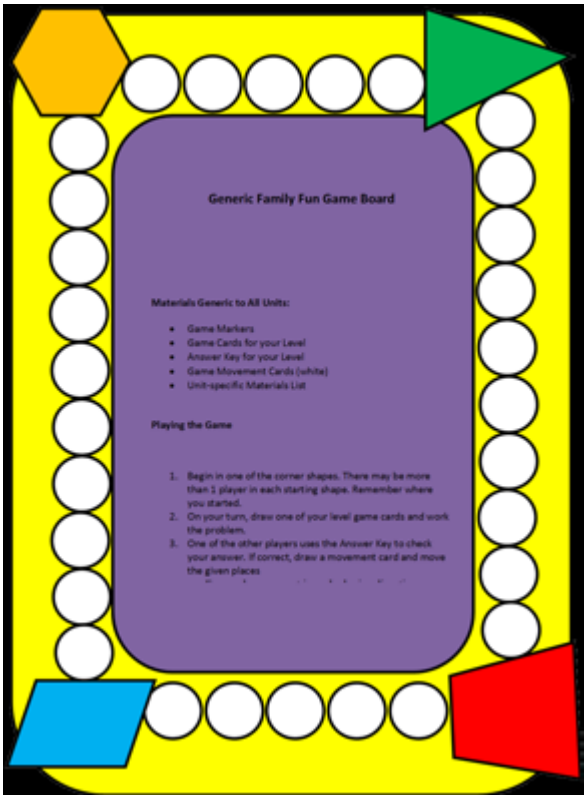
   1 bagel : 2 servings
   2 bagels : 4 servings
   4 bagels : 8 servings
   10 bagels : 20 servings
   3 bagels : 6 servings
   5 bagels : 10 servings
   6 bagels : 12 servings
   8 bagels : 16 servings

2. If the ratio of TBS of cream cheese to servings is 4:2, write the following ratios: This ratio is the inverse of the previous one. This is a classic 2 to 1 ratio. Where the servings are HALF of the TBS.

   1 TBS : $\frac{1}{2}$ servings
   2 TBS : 1 servings
   6 TBS : 3 servings
   8 TBS : 4 servings
   12 TBS : 6 servings
   16 TBS : 8 servings
   20 TBS : 10 servings
   24 TBS : 12 servings

You may use the space below to show your work and/or draw visuals to help solve the problems.

Unit 5 Lesson 3 – Family Fun



Dear _____,

This will be the last Family Fun Game I bring home this summer. The math skill I would like to practice before the test is…

_____

_____

_____

_____

because…

_____

_____

_____

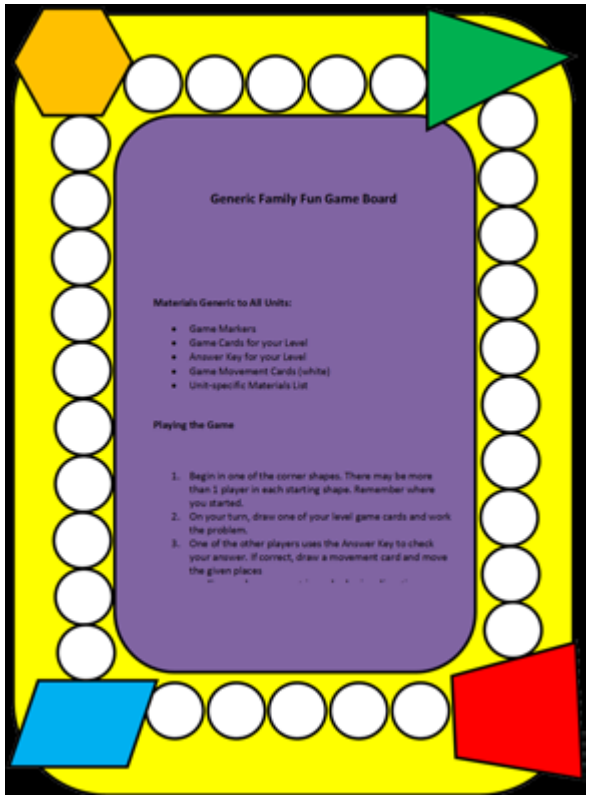
_____

_____

Sincerely,

_____

Unit 5 Lesson 3 – Family Fun



Querido_____,

Este es el último juego del verano. La habilidad matemática que quiero practicar es…

_____
_____
_____
_____

porque…

_____
_____
_____
_____
_____

Atentamente,

_____

This portion of the curriculum is NOT required, but should be used to supplement and enrich the Unit's activities.	**Enrichment Suggestions** Unit 5 *A Foot in the Mouth* **Math "Float" (Virtual)** Use an online website such as Google Earth to: 1. Track your travels in a pirate ship from one popular beach destination to the other. Meanwhile, keeping track of the mileage and calculating a running total in miles as you travel from one place to the next. 2. (Same as #1) but track well known routes sailed by The Flying Dutchman. Create a pirate adventure to support the routes you sailed. Come together as a class and share your travels. **Technology Connection** http://www.google.com/earth/ Google Earth **More Curriculum Connection Ideas off the Web** • **Social Studies:** http://en.wikipedia.org/wiki/Blackbeard History and information about Blackbeard the pirate. http://en.wikipedia.org/wiki/Flying_Dutchman History of the Flying Dutchman – most famous ghost ship • **Science**: http://www.weather.com/travel/worlds-most-amazing-coral-reefs-20130307 The Weather Channel: The World's 10 Most Amazing Choral Reefs • **Art:** http://www.firstpalette.com/tool_box/art_recipes/Salt_Dough/Salt_Dough.html Salt Water Dough http://www.funology.com/salt-water-picture/ Funology – Salt Water Picture http://www.oneperfectdayblog.net/2012/04/27/kids-art-raised-salt-painting/ One Perfect Day – Raised Salt Painting

Units 5 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

Special 5th – 6th Game Instructions

Materials:

- Family Fun Generic Game Board
- Family Fun Movement Cards
- Unit 5 Family Fun Problem Cards for grades 5-6 (yellow)
- Family Fun Answer Key for Unit 5 (all grade bands)
- Unit 5 Family Fun Special 5th – 6th Game Instructions

Solution Expectations

Problems A – B
This problem set is asking students to convert between decimals and/or fractions to solve. They can choose whichever one they are more comfortable with.

Problems C – F
This problem set covers the addition and subtraction of decimals. Students shouldn't have a tough time solving these. The main concern is to make sure place value spots are lined up correctly. Some students line up the decimals, which lines up place value.

*F appears to be a percent concept, but it is not. Students treat the percents as they would any other decimal situation.

Problems G – L
This problem set deals with percents (tax, interest, and tip). All are solved in the same fashion. Students are encouraged to find 10% and work from there.

*K is a general percent problem situation. It does not specifically involve tax, interest, or tip. Solution strategies remain the same, however.

Problems M – P
This problem set covers equivalent ratios. Students are asked to determine if ratios are equivalent/proportional, and to make predictions based off of ratios.

Problems Q – R
This problem set covers adding and subtracting with unlike denominators. Students must first find a common denominator. They may use the multiplication chart provided to them in the previous unit.

Unidad 5, Lección 3 – DIVERSIÓN FAMILIAR

1 por estudiante por hogar
1 por pareja de compañeros en el salón

Instrucciones especiales de juego para 5.º – 6.º

Materiales:

- Tablero de juego genérico de Diversión Familiar
- Cartas de movimiento de Diversión Familiar
- Cartas de problemas de Diversión Familiar de la Unidad 5 para grados 5-6 (amarillo)
- Guía de respuestas de Diversión Familiar para la Unidad 5 (todos los grados)
- Instrucciones especiales de juego de la Unidad 5 de Diversión Familiar para 5.º – 6.º

Expectativas de solución

Problemas A – B
Este conjunto de problemas pide a los estudiantes que conviertan entre decimales o fracciones para resolverlos. Ellos pueden decidir con cuáles se sienten más cómodos.

Problemas C – F
Este conjunto de problemas cubre la suma y la resta de decimales. Los estudiantes no deben tener problemas para resolverlos. La principal preocupación es asegurarse de que los espacios de magnitudes estén alineados correctamente. Algunos estudiantes alinean los puntos decimales, con lo que alinean los espacios de magnitud.

*F aparenta ser un concepto de porcentaje, pero no lo es. Los estudiantes tratan los porcentajes como lo harían con cualquier otra situación decimal.

Problemas G – L
Este conjunto de problemas utiliza porcentajes (impuestos, interés y propinas). Todos se resuelven del mismo modo. Se anima a los estudiantes a encontrar el 10% y continuar desde ahí.

*K es una situación de problema de porcentaje general. Específicamente no utiliza impuestos, intereses ni propinas. Sin embargo, las estrategias de solución son las mismas.

Problemas M – P
Este conjunto de problemas utiliza relaciones equivalentes. Se pide a los estudiantes que determinen si las relaciones son equivalentes/proporcionales, y que hagan predicciones basadas en las relaciones.

Problemas Q – R
Este conjunto de problemas cubre sumas y restas con denominadores diferentes. Los estudiantes primero deben encontrar un común denominador. Pueden usar la tabla de multiplicar que se les proporciona en la unidad anterior.

Units 5 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

*Print on **yellow** paper.*

Family Fun – Problem Cards (1 of 2)

A. **$18\ \frac{3}{7} + 6\ \frac{4}{7} - 24.5 = ?$**	**B**. Marla ran 4.75 miles. Jesse walked $3\frac{3}{8}$ miles farther than Marla. How far did Jesse walk?	**C**. $5000.00 - 4999.99
D. 111,111,111 + 999,999,999	**E**. 27.6 grams salt added to bottle G. 18.05 grams of salt added to bottle H. 9.007 grams of salt added to bottle J. How much salt was used altogether?	**F**. A solution is made up of 18.06% -chemical A, 70.02%-distilled water, and the remaining percentage is chemical B. What percent is chemical B?
G. There is a 15% hotel tax in Oregon. If the room cost was $183.00, how much tax should be charged?	**H**. 70% tip of $500 = ?	**I**. Delia deposited $600 into a savings account for her son. It will earn 15% interest in one year if untouched. How much will she earn that year?

Units 5 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

*Print on **yellow** paper.*

Family Fun – Problem Cards (1 of 2)

Diversión familiar – Cartas de problemas (1 de 2)

A. **$18\ \frac{3}{7} + 6\ \frac{4}{7} - 24.5 = ?$**	**B**. Marla corrió 4.75 millas. Jesse caminó $3\ \frac{3}{8}$ millas más que Marla. ¿Cuánto caminó Jesse?	**C**. $5000.00 - 4999.99
D. 111,111,111 + 999,999,999	**E**. 27.6 gramos de sal agregados a la botella G. 18.05 gramos de sal agregados a la botella H. 9.007 gramos de sal agregados a la botella J. ¿Cuánta sal se usó en total?	**F**. Una solución está hecha de 18.06% de sustancia química A, 70.02% de agua destilada y el porcentaje restante es de sustancia química B. ¿Qué porcentaje corresponde a la sustancia química B?
G. Hay un impuesto de hotel de 15% en Oregon. Si el costo de la habitación fue de $183.00, ¿cuánto se debe cobrar de impuestos?	**H**. propina del 70% de $500 = ?	**I**. Delia depositó $600 en una cuenta de ahorros para su hijo. Ganará 15% de interés en un año si no se toca. ¿Cuánto ganará en ese año?

Units 5 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

*Print on **yellow** paper.*

Family Fun – Problem Cards (2 of 2)

J.
Tiffany's credit card charged her 20% interest each month on purchases. If she paid $46.00 in interest, how much did she charge on the card that month?

K.
12 cups of granola consists of about 25% cashews. How many cups of cashews are in the granola mixture?

L.
Julie left a $12.50 tip on a bill that was $125.00? What percent tip did she leave?

M. Determine if this statement is true.

$$\frac{9 \text{ green}}{10 \text{ blue}} = \frac{45 \text{ green}}{40 \text{ blue}}$$

N. Determine if this statement is true.

$$\frac{24 \text{ lbs}}{\$8} = \frac{6 \text{ lbs}}{\$2}$$

O. Based on the ratio given, determine how many cotton balls fit in one bag.

9600 cotton balls : 8 bags

P.
Nurse Farrah delivers about 6 babies per shift at the hospital. At this rate, how many babies will she deliver in 8 shifts?

Q.

$$\frac{9}{12} + \frac{1}{4} = ???$$

R.

$$3\frac{2}{3} - 1\frac{1}{5} = ???$$

Units 5 Lesson 3 – FAMILY FUN
One per student for home
One per partner pair in class

*Print on **yellow** paper.*

Family Fun – Problem Cards (2 of 2)

J.
La tarjeta de crédito de Tiffany le cobró un 20% de interés cada mes sobre sus compras. Si pagó $46.00 de intereses, ¿cuánto gastó con la tarjeta ese mes?

K.
12 tazas de granola consisten aproximadamente en 25% de anacardos. ¿Cuántas tazas de anacardos hay en la mezcla de granola?

L.
Julie dejó una propina de $12.50 de un factura que era de $125.00. ¿Qué porcentaje de propina dejó?

M. Determina si esta afirmación es correcta.

$$\frac{9 \text{ green}}{10 \text{ blue}} = \frac{45 \text{ green}}{40 \text{ blue}}$$

N. Determina si esta afirmación es correcta.

$$\frac{24 \text{ lbs}}{\$8} = \frac{6 \text{ lbs}}{\$2}$$

O. En base a la relación dada, determina cuántas bolitas de algodón caben en una bolsa.

9600 bolitas de algodón: 8 bolsas

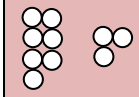
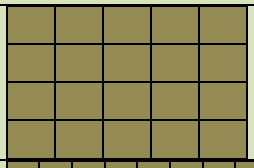
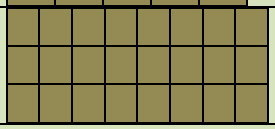
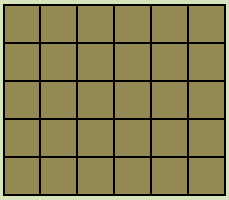
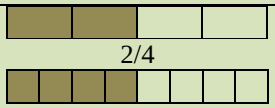
P.
La enfermera Farrah asiste en el parto de 6 bebés por turno en el hospital. A este ritmo, ¿cuántos partos atenderá en 8 turnos?

Q.

$$\frac{9}{12} + \frac{1}{4} = ???$$

R.

$$3\frac{2}{3} - 1\frac{1}{5} = ???$$

Problem Letter	Kinder	1-2	3-4	5-6	7-8
A	5 baby ducks	23	10	0.5	3 units
B	9 baby ducks	39	6	$8\frac{1}{8}$	1 unit
C	9 baby ducks	70	48	$0.01	2 units
D	3 kernels	37	8 cells	1,111,111,110	50%
E	8 kernels	6	6 bees	54.657 grams salt	50%
F	1 crumb	17	40 plants	11.92% chemical B	75%
G	 10	21		$27.45 tax	20
H		66		$350 tip	32.5
I	Half OR one of 2 equal pieces OR fair shares. (See Kinder Special Instructions for answer to second part.)	$\frac{1}{8}$		$90 interest	18
J	Dime	Cut the cake into 8 shares	5.21	$230 charged	$5.00 earned
K	Penny	Yes. There are 2 equal pieces	5 x 7 = 35 7 x 5 = 35 35 ÷ 7 = 5 35÷ 5 = 7	3 cups cashews	$6.00 earned
L	Nickel	8	xx xx xx xx xx xx	10% tip	$16.74 total bill with tip
M	Quarter	4 + 5 = 9	Eleven and seven hundredths	False. Scale factor not consistent	$3.00 tip
N	Top group	12 – 2 =10	 2/4 4/8	True. Scale factor = (÷4) or (x $\frac{1}{4}$)	$11.10 tip
O	Bottom group	12	0.3	120 cotton balls: 1 bag	$6.97
P	14	9	Line closest to 0	48 babies	$20.00 retail
Q	9	7, 3	Line in the middle	$\frac{12}{12}$ or 1 whole	$22.50 sales price
R	15 beans Card 15	9+ 5 – 14 5 + 9 = 14 14 – 9 = 5 14 – 5 = 9	Between 0.5 and 0.75, closer to 0.75	$2\frac{7}{15}$	$9.00 sales price

Generic Family Fun Game Board

Materials Generic to All Units:

- Game Markers
- Game Cards for your Level
- Answer Key for your Level
- Game Movement Cards (white)
- Unit-specific Materials List

Playing the Game

1. Begin in one of the corner shapes. There may be more than one player in each starting shape. Remember where you started.
2. On your turn, draw one of your level game cards and work the problem.
3. One of the other players uses the Answer Key to check your answer. If correct, draw a movement card and move the given places
   - Forward movement in a clockwise direction.
   - Back movement in a counter clockwise direction.

   If incorrect, do not move.
4. Game is over when the first person runs the entire track, ending back on the starting shape.

Tablero de juego

Materiales genéricos para todas las unidades:

- Fichas para jugar
- Tarjetas del juego para su nivel
- Clave de respuestas para su nivel
- Tarjetas de movimiento del juego (blancas)
- Lista de materiales específicos de la unidad

Cómo se juega

1. Empiece en una de las esquinas. Puede haber más de
1 jugador en cada figura de inicio.
2. Cuando sea su turno, saque una de las tarjetas de
juego de su nivel y resuelva el problema.
3. Uno de los otros jugadores usa la clave de respuestas
para ver si su respuesta es correcta. Si es correcta, saque una tarjeta de movimiento y mueva su ficha como lo indica la tarjeta.
   - Movimiento hacia adelante en el sentido de las manecillas del reloj.
   - Movimiento hacia atrás en el sentido contrario a las manecillas del reloj.

   Si es incorrecta, no se mueve.
4. El juego se acaba cuando la primera persona recorre
toda la pista y termina en la figura de inicio.

BLM **Follow-up Lesson 3** **Family Fun Game Movement Cards**

Printed in White – 1 set for the TV Lesson Demo. 1 set per partners for class; 1 set per student for home.

Move forward 1 space	**Move forward 1 space**	**Move forward 1 space**
Move forward 1 space	**Move forward 1 space**	**Move forward 1 space**
Move forward 2 spaces	**Move forward 2 spaces**	**Move forward 2 spaces**
Move back 1 space	**Move back 1 space**	**Move back 1 space**
Move forward 3 spaces	**Move forward 2 spaces**	**Move forward 3 spaces**

. FAMILY FUN

One per student for home
One per partner pair in class

*Print on **white** paper.*

Family Fun – Movement Cards

Avanza un espacio	**Avanza un espacio**	**Avanza un espacio**
Avanza un espacio	**Avanza un espacio**	**Avanza un espacio**
Avanza 2 espacios	**Avanza 2 espacios**	**Avanza 2 espacios**
Retrocede 1 espacio	**Retrocede 1 espacio**	**Retrocede 1 espacio**
Avanza 3 espacios	**Avanza 3 espacios**	**Avanza 3 espacios**

Unit 5 – *A Foot in the Mouth* selected by Paul B. Janeczko

Math Matters 2014 – In-Home Instruction

Math Objectives

TV Lesson 1

- Add and subtract positive rational numbers fluently.
- Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.

TV Lesson 2

- Give examples of ratios as multiplicative comparisons of two quantities describing the same attribute.
- Give examples of rates as the comparison by division of two quantities having different attributes, including rates as quotients.

Differentiate

TV Lesson 1 – students solve problem situations that involve adding and subtracting positive rational numbers and fractions with unlike denominators.

TV Lesson 2 – students solve proportional problem situations using various multiplicative strategies.

Snack Fraction Notice

All snack fractions are common throughout the grade bands. All grade bands have daily snack fraction activities provided. All snack fractions for a unit in a specific grade band will practice the same set of skills.

Materials

TV Lesson 1

- **BLM** *Otter* Take Care of Your Aquarium!

TV Lesson 2

- **BLM** Me Hearty Vegetables

Family Fun

- Family Fun Generic Game Board
- Family Fun Movement cards
- Unit 5 Family Fun-Problem Cards
- Family Fun Answer Key from Unit 5 (all grade bands)
- Unit 5 Family Fun Special 5^{th} – 6^{th} Game Instructions
- game markers

Snack Fractions, Lesson 2

4 graham crackers
1 TBS Nutella (*Caution: Nutella contains nuts)*
3 large strawberries
paper dessert plates
paper towels
plastic knives
BLM Crackers and Nutella Snack Fractions
BLM Crackers and Nutella Snack Fractions - Teacher Key

Unit 5 – *A Foot in the Mouth* selected by Paul B. Janeczko

Math Matters 2014 – In-Home Instruction

QUESTIONING
As a result of this lesson, your students should be able to respond to the following:

- How is a multiplication chart helpful when finding a common denominator in adding and subtracting situations?
- Proportional ratios will always have a consistent scale factor. True or false?
- Proportional ratios will always have a consistent constant of proportionality. True or false?
- Why is 10% so important to finding most other percents?

Math Vocabulary
fraction, ratio, decimal, percent, equivalent, scale factor, constant of proportionality, benchmark

CGI Problem

- Lesson 1 – Part-Part-Whole (5^{th} asmnt item 4)
- Lesson 2 – Compare Referent Unknown (5^{th} asmnt item 5)
- Lesson 3 – Price Partitive Division (6^{th} asmnt item 6)

Journal Writing
(Lesson 3 Snack Fraction Journal) Explain how all of the ratios in problem 1 relate to the original ratio of 1 to 2.

Family Fun
A generic game board is being used in all grade levels, differentiated by game cards specific to the grade level.

Snack Fractions
Students divide their snack into halves and find equivalent ratios based on their portions by either combining the ratios or thinking through them multiplicatively.

Assessment
As a result of experiencing the activities in this unit, students will be introduced to and practice skills for items:
5^{th} – all items
6^{th} – all items

Grades 5-6 Overview

Unit 6, Lesson 1 *Bridges! Amazing Structures to Design, Build and Test*

by Carol A. Johmann and Elizabeth J. Rieth

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine 10 - 15 minutes	post-assess summer skills	post-assess summer skills	post-assessment		• post-assessment
Classroom Lesson 30 – 45 minutes	Identify math in everyday situations. Explain and record observations using objects, words, pictures, numbers and technology. Make generalizations from patterns or sets of examples and non-examples. Justify why an answer is reasonable and explain the solution process.	Listen to classmates and to teacher discuss and read. Speak, read and write vocabulary words in context. Brainstorm and discuss the various problems given. Create a chart of sorted items and explain how you decided to sort them. Create a list of things to do before building a skyscraper can begin. Justify your conclusions based on the results of your investigations.	**Vocabulary** Create Frayer model posters for each word. Discuss EiE Engineering Design Process. **Literature** Basics of bridges. **Transition to Math** Explore forces on a suspension bridge.	• 7 pieces of large construction paper • EiE Engineering Design Process Posters ordered from http://www.eiestore.com/posters.html • rope strong enough to play "tug-o-war"	
TV Lesson 30 minutes	Identify math in everyday situations. Explain and record observations using objects, words, pictures, numbers and technology. Make generalizations from patterns or sets of examples and non-examples. Justify why an answer is reasonable and explain the solution process.	Listen to classmates and to teacher discuss and read. Speak, read and write vocabulary words in context. Brainstorm and discuss the various problems given. Create a chart of sorted items and explain how you decided to sort them. Create a list of things to do before building a skyscraper can begin. Justify your conclusions based on the results of your investigations.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Demonstrate how students will build the cofferdam.	• pan • sand or dirt • water • Popsicle sticks (at least 30 per group) • masking or painter's tape • plastic wrap • turkey baster (or eye dropper)	• **BLM** Cofferdam Instructions

Follow-up Lesson 2-2.5 hours *(including Snack Fractions)*	Identify math in everyday situations. Explain and record observations using objects, words, pictures, numbers and technology. Make generalizations from patterns or sets of examples and non-examples. Justify why an answer is reasonable and explain the solution process.	Listen to classmates and to teacher discuss and read. Speak, read and write vocabulary words in context. Brainstorm and discuss the various problems given. Create a chart of sorted items and explain how you decided to sort them. Create a list of things to do before building a skyscraper can begin. Justify your conclusions based on the results of your investigations.	**Practice and Application** Students build cofferdams.	• pan • sand or dirt • water • Popsicle sticks (at least 30 per group) • masking or painter's tape • plastic wrap • turkey baster (or eye dropper)	• **BLM** Cofferdam Instructions
Snack Fractions	Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents. Convert between fractions, decimals, and percents. Estimate to find solutions to problems involving fractions, decimals, and percents.	Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.	Students will work in pairs and explore fraction and decimal concepts through fair-sharing Energy Balls.	• Energy Balls (homemade or store prepared – recipe provided) ***Allergy Warning – please substitute a different mix for the entire class if nut allergies are present.*** • quart sized sandwich bag • 4 paper plates • 4 paper towels • 4 plastic knives *All items listed above per group of four*	

Grades 5-6 Overview

Unit 6, Lesson 2 *Bridges! Amazing Structures to Design, Build and Test*

by Carol A. Johmann and Elizabeth J. Rieth

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine 30 – 45 minutes	Model and solve multistep word problems. Solve problems involving fractions, ratios, and proportions.	Speak to partners, teacher, and class using vocabulary. Discuss problem solving process and strategies.	**Essential:** • Fraction Action • *X* Marks the Spot • CGI **Optional:** Money Matters		• **BLM** Fraction Action and *X* Marks the Spot • **BLM** Lessons 2-3 CGI *Bridges! Amazing Structures to Design, Build and Test*
Classroom Lesson 1 hour – 1.5 hours	Identify math in everyday situations. Explain and record observations using objects, words, pictures, numbers and technology. Make generalizations from patterns or sets of examples and non-examples. Justify why an answer is reasonable and explain the solution process.	Listen to classmates and to teacher discuss and read. Speak, read and write vocabulary words in context. Brainstorm and discuss the various problems given. Create a chart of sorted items and explain how you decided to sort them. Create a list of things to do before building a skyscraper can begin. Justify your conclusions based on the results of your investigations.	**Vocabulary** Review posters and make additions if requested by students. **Literature** Students read about and research famous suspension bridges in the United States. **Transition to Math** Students explore how the forces work on an arch bridge.	• computer with Internet access (1 per class or 1 per pair of students) • printer	• **BLM** My Suspension Bridge Template
TV Lesson 30 minutes	Identify math in everyday situations. Explain and record observations using objects, words, pictures, numbers and technology. Make generalizations from patterns or sets of examples and non-examples. Justify why an answer is reasonable and explain the solution process.	Listen to classmates and to teacher discuss and read. Speak, read and write vocabulary words in context. Brainstorm and discuss the various problems given. Create a chart of sorted items and explain how you decided to sort them. Create a list of things to do before building a skyscraper can begin. Justify your conclusions based on the results of your investigations.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Demonstrate how students will build the suspension bridge.	• 2 kitchen chairs (or any chair that is similar in size and shape) • spool of heavy string • 4 heavy books • masking tape • cardboard (at least 1ft x 3ft) • scissors • single hole punch • spool of thread or light string • load (of choice –	• **BLM** Hang a Suspension Bridge Instructions

				object available in room)	
Follow-up Lesson 30 minutes – 1 hour *(including Snack Fractions)*	Identify math in everyday situations. Explain and record observations using objects, words, pictures, numbers and technology. Make generalizations from patterns or sets of examples and non-examples. Justify why an answer is reasonable and explain the solution process.	Listen to classmates and to teacher discuss and read. Speak, read and write vocabulary words in context. Brainstorm and discuss the various problems given. Create a chart of sorted items and explain how you decided to sort them. Create a list of things to do before building a skyscraper can begin. Justify your conclusions based on the results of your investigations.	**Practice and Application** Students will build a suspension bridge.	• 2 kitchen chairs (or any chair that is similar in size and shape) • spool of heavy string • 4 heavy books • masking tape • cardboard (at least 1ft x 3ft) • scissors • single hole punch • spool of thread or light string • load (of choice – object available in room)	• **BLM** Hang a Suspension Bridge Instructions
Snack Fractions	Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents. Convert between fractions, decimals, and percents. Estimate to find solutions to problems involving fractions, decimals, and percents.	Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.	Students will work in pairs and explore fraction and decimal concepts through fair-sharing a turkey wrap.	• 1 oz. turkey • 1 slice Swiss cheese • 1 leaf lettuce • 1 TBS cranberry relish • 1 burrito sized tortilla • 2 paper dessert plates • 2 paper towels • 2 plastic knives *All items listed above per partner pair*	

Grades 5-6 Overview

Unit 6, Lesson 3 *Bridges! Amazing Structures to Design, Build and Test*

by Carol A. Johmann and Elizabeth J. Rieth

This is a quick snapshot of each of the three math lessons for this unit. For detailed instructions, balanced literacy objectives and enrichment ideas, refer to the complete lesson plans for each lesson.

Lesson Segment	Math Objectives	Language Objectives	Activity	Materials	BLM
Daily Routine 30 – 45 minutes	Model and solve multistep word problems. Solve problems involving fractions, ratios, and proportions.	Speak to partners, teacher, and class using vocabulary. Discuss problem solving process and strategies.	**Essential:** • Fraction Action • *X* Marks the Spot • CGI **Optional:** Money Matters		• **BLM** Fraction Action and *X* Marks the Spot • **BLM** Lessons 2-3 CGI *Bridges! Amazing Structures to Design, Build and Test*
Classroom Lesson 1 hour – 1.5 hours	Identify math in everyday situations. Explain and record observations using objects, words, pictures, numbers and technology. Make generalizations from patterns or sets of examples and non-examples. Justify why an answer is reasonable and explain the solution process.	Listen to classmates and to teacher discuss and read. Speak, read and write vocabulary words in context. Brainstorm and discuss the various problems given. Create a chart of sorted items and explain how you decided to sort them. Create a list of things to do before building a skyscraper can begin. Justify your conclusions based on the results of your investigations.	**Vocabulary** Review posters and make additions if requested by students. **Literature** Students read about and research famous bridges that move/lift globally. **Transition to Math** Students explore how to balance like a bridge.	• computer with Internet access (1 per class or 1 per pair of students) • printer	• **BLM** My Bridge that Lifts Template
TV Lesson 30 minutes	Identify math in everyday situations. Explain and record observations using objects, words, pictures, numbers and technology. Make generalizations from patterns or sets of examples and non-examples. Justify why an answer is reasonable and explain the solution process.	Listen to classmates and to teacher discuss and read. Speak, read and write vocabulary words in context. Brainstorm and discuss the various problems given. Create a chart of sorted items and explain how you decided to sort them. Create a list of things to do before building a skyscraper can begin. Justify your conclusions based on the results of your investigations.	**Vocabulary** Use literature and math vocabulary pervasively in the lesson. **Comprehensible Input** Demonstrate how students will build a bridge that moves.	• hole punch • scissors • string • 2 empty cereal boxes • 1 piece of thin cardboard (about the size of the boxes) • drinking straw cut in half	• **BLM** Lift That Bridge! Instructions

Follow-up Lesson 30 minutes – 1 hour *(including Snack Fractions)*	Identify math in everyday situations. Explain and record observations using objects, words, pictures, numbers and technology. Make generalizations from patterns or sets of examples and non-examples. Justify why an answer is reasonable and explain the solution process.	Listen to classmates and to teacher discuss and read. Speak, read and write vocabulary words in context. Brainstorm and discuss the various problems given. Create a chart of sorted items and explain how you decided to sort them. Create a list of things to do before building a skyscraper can begin. Justify your conclusions based on the results of your investigations.	**Practice and Application** Students build a bridge that moves.	• hole punch • scissors • string • 2 empty cereal boxes • 1 piece of thin cardboard (about the size of the boxes) • drinking straw cut in half	• **BLM** Lift That Bridge! Instructions
Snack Fractions	Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents. Convert between fractions, decimals, and percents. Estimate to find solutions to problems involving fractions, decimals, and percents.	Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.	Students will work in pairs and explore fraction and decimal concepts through fair-sharing a veggie pizza.	• 1 personal pan pizza • 2 individual servings of juice • 2 paper dessert plates • 2 paper towels • 2 plastic knives *All items listed above per partner pair*	

Project SMART/Math MATTERS 2014

Grade Level: 5-6	Unit 6 / Lessons 1 – 2 – 3

Daily Routine Math Objectives:
Model and solve multistep word problems.
Solve problems involving fractions, ratios, and proportions.
Solve for a variable.

Daily Routine Language Objectives:
Speak to partners, teacher, and class using vocabulary.
Discuss problem solving process and strategies.

Unit Math Objectives:
Identify math in everyday situations.
Explain and record observations using objects, words, pictures, numbers and technology.
Make generalizations from patterns or sets of examples and non-examples.
Justify why an answer is reasonable and explain the solution process.

Unit Language Objectives:
Listen to classmates and to teacher discuss and read.
Speak, read and write vocabulary words in context.
Brainstorm and discuss the various problems given.
Create a chart of sorted items and explain how you decided to sort them.
Create a list of things to do before building a skyscraper can begin.
Justify your conclusions based on the results of your investigations.

Unit Science Objectives:
Demonstrate safe practices and the use of safety equipment as needed during investigations.
Plan and implement descriptive investigations, including asking well-defined questions, making inferences, and selecting and using appropriate equipment or technology to answer the questions.
Collect and record data by observing and measure, using descriptive words and numerals such as labeled drawing, writing, and concept maps.
Analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured.
Communicate valid, oral and written results supported by data.
Brainstorm and discuss the various problems given.
Generate charts to describe the outcomes of investigations.

Technology Objectives:
Use research skills and electronic communication, with appropriate supervision, to create new knowledge.

Vocabulary
Math and Language: technology, engineer, architect, scientist, environmentalist, load, dam, suspension

Project SMART/Math MATTERS 2014

Grade Level: 5-6	Unit 6 / Lessons 1 – 2 – 3

Lesson Sequence – *Note the suggested time differences. Adjustments were made to accommodate the STEM Projects. Please modify to meet the needs of your students.*

- Daily Routine: 10 – 15 minutes
- Classroom Lesson: 30 – 45 minutes
- Math Lesson: 30 minutes
- Follow-up including Snack Fractions: 2 – 2.5 hours

Unit 6, Teacher Introduction

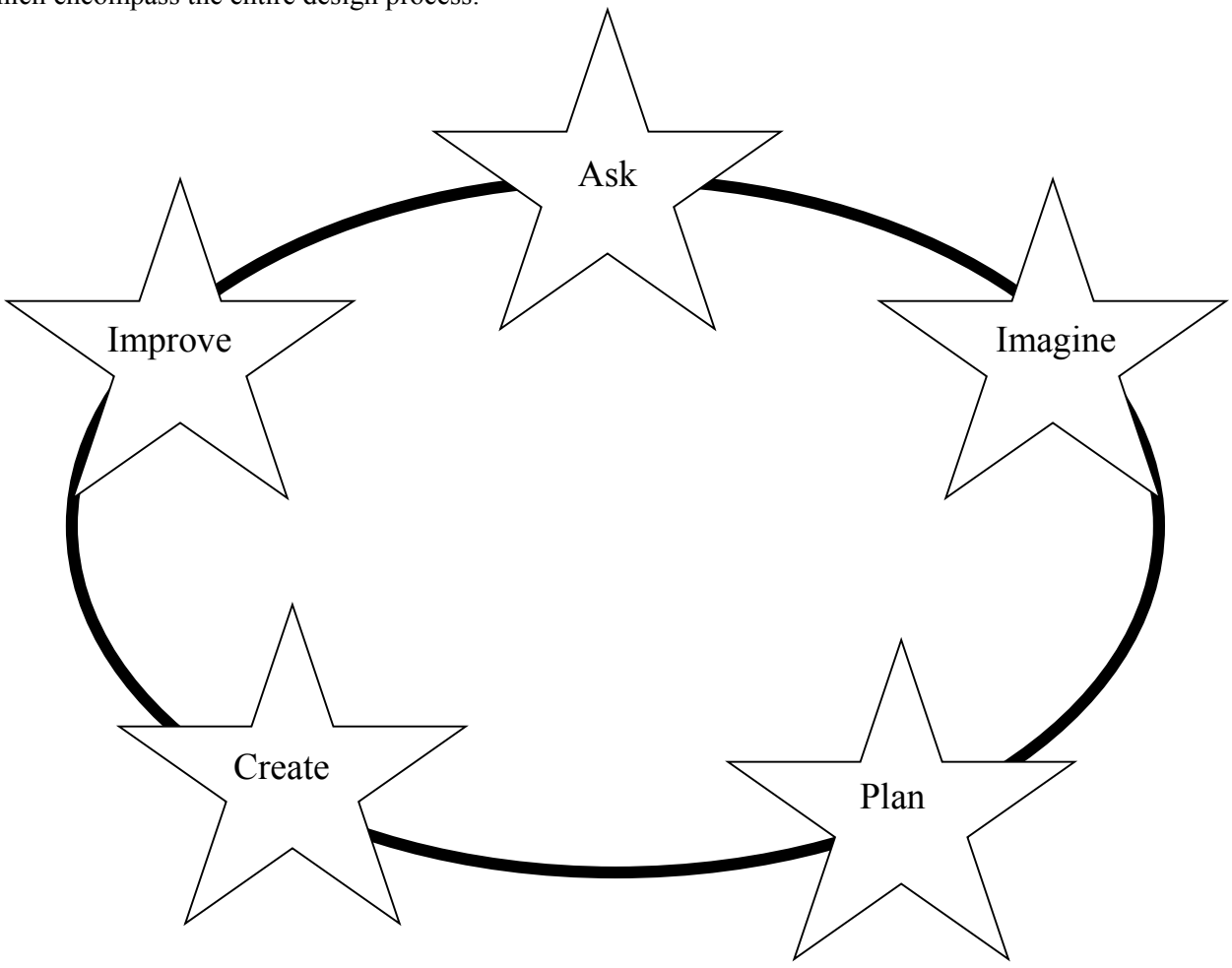
Although this is not technically a STEM (Science, Technology, Engineering, Math) or STEAM (Science, Technology, Engineering, Art, Math) or EiE (Engineering is Elemental) project, the unit has been written to incorporate the same philosophies as each of those projects.

Students begin to see the science and engineering all around them in their everyday lives, and as they plan and create their projects, they will be consciously using the Engineering Design Process. As teachers we are probably not as familiar with "technology" as we are the science around us. Technology is defined as *anything that has been designed by engineers to fulfill a human need*. So simple things like pencils, chairs, toothbrushes, as well as those complex things we usually think of as engineered such as cell phones, buildings, computers, space shuttles, are all representations of engineered projects in our world. These *technologies* are all *engineered* to solve a particular human need.

Engineers follow a process, much like the scientific process. There is a difference between the two processes because the objectives are different. The scientific process is used when you are investigating how something in nature works by making observations and doing experiments, while the engineering process is used when you are creating a solution to a problem.

Each grade band K-6 has a book of projects which will be read, discussed and enjoyed by the students using literary devices. The teacher will then pose a problem that needs to be solved, and the students will use the Engineering Design Process to create a solution to that problem.

Engineering Design Process. EiE (Engineering is Elementary) has simplified the process into five steps which encompass the entire design process.



Because of the nature of this unit, there will be major breaks in the formal pattern to which we are all so accustomed. Daily Routines are present; however several activities have been removed to accommodate more time for project design.

The literature reading will be less a focus in lessons 2 & 3 because the focus is directed toward the Engineering Design Process.

TV Lessons will be more of a demonstration so that students will understand their Follow-up design lessons. Students are still expected, however, to respond and maintain engagement.

Other changes are:

- **Family Fun Game**, which will not go home this unit. Families that wish may still, of course, play the old cards – there are five units worth of very good practice problems they can incorporate into their game time.
- **Snack Fractions** will not have a BLM this unit. Students will be asked verbally, but will for the most part, be allowed time to enjoy a snack shared with a friend.
- **In-Home lessons** are very different – Because lessons 1, 2, and 3, build upon one another, there really is no single lesson that could be chosen to teach. Instead, it is suggested that ALL grade bands use the Kinder book, ***Simple Machines,*** by Deborah Hodge; and that the Teacher select one project within the book that her families could accomplish together. Bring the supplies, read the activity and let the siblings work together to experience the learning of simple machines.

We hope you enjoy this final unit and that your Summer Session has been most successful.

Unit 6 Project
STEM or STEAM Projects

You are about to begin the final lesson of this unit. If you and your students are going to participate in the project suggested for this unit, now is the time to prepare.

Project for this unit is: Display of STEM projects completed during this unit.

Synopsis
Students share the projects they have worked on during it his unit. This would be a wonderful venue for a family end-of-the-summer party.

Materials:
- Display tables in a large room
- Snacks and punch
- Photos or PowerPoint type presentation of students working through the unit

Objectives
- Students create their STEM project.
- Students prepare a final draft of their project prospectus to be displayed with their projects.

Procedures:
The event should be a museum-type display, with work displayed on tables set up so that people can walk around the displays, seeing them from all angles. "Please do not touch" signs should be placed on all displays to protect them, and all classes should be trained in the art of viewing displays. Provide appropriate snacks at the end of the displays, and engage students and adults in comments and questions. Super opportunity to engage family and community members.

Online resources
- http://museumplanner.org/museum-exhibition-design-2/
- http://morrisoncountyhistory.org/?page_id=1449
- http://www.adlerdisplay.com/museum-displays/index.php commercial site, but interesting photos of possible display venues.
- http://www.thehistoryworkshop.com/Portfolio/exhibits.html#!nav=1&gallery=1 another commercial site, but interesting ideas to glean

Project Title: _____

Student Name: _____

Date: _____ Teacher: _____

Math MATTERS Project Rubric

	1 point	2 points	3 points	4 points	Score
Amount of Project Completed	Little effort made, most items are unaddressed or incomplete	Some parts of the project were addressed and complete	Most of the project parts were addressed and complete, a few may be missing	All parts of the project were addressed and complete	
Quality of Work	Could not read project, project poorly organized	Project was partially organized, many parts were confusing or unrelated	Project was mostly organized, a few parts may be confusing or unrelated	Project highly organized and all parts clearly related to the topic	
Use of Time and Effort	Did not use time effectively	Used some time effectively, but was often off task	Used most time effectively, occasionally off task	Student used all available time to the fullest	
Presentation	Student could not explain own project	Student needed to be prompted to explain own project	Student explained project with little prompting	Student easily explained the project and could answer questions	
				Total	

A total score of 12 or more points is needed to consider the project complete.

Notes:

Rubric is an adaptation of Rcampus Math Project Rubric: Fraction Word Problems
http://www.rcampus.com/rubricshowc.cfm?code=F945W8&sp=true&

Materials
- post-assessment

Math Objectives
- post-assess summer skills

Language Objectives
- post-assess summer skills

Math and Literature Vocabulary
technology
engineer
architect
environmentalist
load
dam
suspension

Assessed TEKS for this Unit
5th – 5.3H, 5.3K
6th – 6.4C, 6.4D, 6.4E, 6.5B, 6.5C

Unit 6, Lesson 1 — Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post-assessment. They are not optional.

ESSENTIAL

Measurement Lab
omitted

Solve It! Multi-step problem solving
omitted

Fraction Action
- **Lesson 1 – *omitted***
- Lesson 2 – (5th assessment item 1,2,3)
- Lesson 3 – (5th assessment item 6)

***X* Marks the Spot**
- **Lesson 1 – *omitted***
- Lesson 2 – (6th assessment item 2)
- Lesson 3 – (6th assessment item 8)

CGI
- **Lesson 1 – omitted**
- Lesson 2 – Compare Referent Unknown (5th assessment item 5)
- Lesson 3 – Price Partitive Division (6th assessment item 6)

The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.

OPTIONAL

Target Number
omitted

Money Matters
(*If you have a full program and wish to use this optional activity, you will find BLMs and Explanations on MAS Space.)*

Unit 6 CGI Problems for *Bridges!*

	Multiplication	Measurement Division	Partitive Division
Grouping and Partitioning	Pile it on! Our class made some different kinds of bridges. We tested them by seeing how many paper clips they could hold. If there are ___ students in our class and each student used an average of ___ clips, how many clips did we use in all? 12, 12 15, 15 23, 19	Pile it on! Our class made some different kinds of bridges. We tested them by seeing how many paper clips they could hold. The class used a total of ___ paper clips with each person using an average of ___ clips. How many students were in the class? 360, 18 408, 34 154, 14	Pile it on! Our class made some different kinds of bridges. We tested them by seeing how many paper clips they could hold. The class used a total of ___ clips. If there are ___ students in the class, how many clips did each student use? 135, 9 234, 13 336, 16
Rate	The Wonder Bridge in London opens about 500 times per year to let sailing vessels go through. How many times has the bridge raised over the past ___ years? 10 15 25	During one period of time, a total of 162,414 cars crossed the San Francisco Bridge. If 6767.25 cars crossed per hour, how many hours did it take for the 162,414 cars to cross?	The Wonder Bridge in London opens 500 times per year to let sailing vessels go through. There are 365 days in a year. How many times on average does it raise per day?
Price	With the opening of the Confederation Bridge between New Brunswick and Prince Edward Island, people can now cross the strait in 10 minutes for $35. If an average of ___ cars cross the bridge each day, how much money is collected each day? 56 75 123	With the opening of the Confederation Bridge between New Brunswick and Prince Edward Island, people can now cross the strait in 10 minutes. If ___ was collected in one day and it cost each car $35, how many cars crossed the bridge? $2,030 $3,570 $5,810	Building a new bridge costs a lot of money! If the total cost of a bridge is $104,000 and the bridge is 650 square feet, how much does it cost to build a bridge per square foot?
Fractions	An I-Beam used in bridge building could weigh 3/4 ton for a 20 foot beam. How many tons would 250 beams weigh? How many pounds would that be?	One bridge spans a total of 183.75 feet. Each truss takes up 12.25 feet. How many trusses are there?	You want to build a bridge over the creek. The span is 21 ¼ feet. If you used 42 ½ planks set side-by-side, how wide was each plank?
Multiplicative Comparison	The Golden Gate bridge is 2.5 times longer than the Brooklyn Bridge. The Brooklyn bridge is 1600 feet long. How long is the Golden Gate Bridge?	Bridge maintenance and repairs are expensive! By one estimate, by paying a crew $125,000 a year to maintain a bridge, $375,000 in repairs later on could be avoided. How many times more expensive is it to repair rather than maintain a bridge?	In the olden days, the Wonder Bridge raised 6000 times per year to allow sailing vessels through. That was 12 times more than the times it raises per year now. How many times per year does the Wonder Bridge raise nowadays?

Formación de grupos y Partición	¡Apílalo! Nuestra clase hizo algunos tipos de puentes distintos. Los probamos viendo cuántos clips de papel podrían sostener. Si hay ___ estudiantes en nuestra clase y cada estudiante usaba en promedio ___ clips, ¿cuántos clips usamos al final? 12, 12 15, 15 23, 19	¡Apílalo! Nuestra clase hizo algunos tipos de puentes distintos. Los probamos viendo cuántos clips de papel podrían sostener. La clase usó en total ___ clips para papel con cada persona utilizando un promedio de ___ clips. ¿Cuántos estudiantes había en la clase? 360, 18 408, 34 154, 14	¡Apílalo! Nuestra clase hizo algunos tipos de puentes distintos. Los probamos viendo cuántos clips de papel podrían sostener. La clase usó en total ___ clips. Si hay ___ estudiantes en nuestra clase, ¿cuántos clips usó cada estudiante? 135, 9 234, 13 336, 16
Velocidad	El Wonder Bridge en Londres abre unas 500 veces al año para dejar que los barcos pasen navegando a través de él. ¿Cuántas veces se ha levantado el puente en los últimos ___ años? 10 15 25	Durante un período de tiempo, un total de 162,414 autos cruzó el Puente San Francisco. Si 6767.25 autos cruzaron por hora, ¿cuántas horas se necesitaron para que cruzaran 162,414 autos?	El Wonder Bridge en Londres abre unas 500 veces al año para dejar que los barcos pasen navegando a través de él. El año tiene 365 días. ¿Cuántas veces en promedio se levanta al día?
Precio	Con la apertura del Confederation Bridge entre New Brunswick y Prince Edward Island, ahora la gente puede cruzar el tramo en 10 minutos por $35. Si un promedio de ___ autos cruza el puente cada día, ¿cuánto dinero se recauda cada día? 56 75 123	Con la apertura del Confederation Bridge entre New Brunswick y Prince Edward Island, ahora la gente puede cruzar el tramo en 10 minutos. Si se recaudó ___ en un día y a cada auto le cuesta $35 pasar, ¿cuántos autos cruzaron el puente? $2,030 $3,570 $5,810	¡Construir un puente nuevo cuesta mucho dinero! Si el costo total de un puente es $104,000 y el puente tiene 650 pies cuadrados, ¿cuánto cuesta construir un puente por pie cuadrado?
Fracciones	Una Viga en I que se usa en la construcción de un puente puede pesar 3/4 de tonelada para una viga de de 20 pies. ¿Cuántas toneladas pesarían 250 vigas? ¿Cuánto sería eso en libras?	Un puente abarca un total de 183.75 pies. Cada cercha abarca 12.25 pies. ¿Cuántas cerchas hay?	Quieres construir un puente sobre el arroyo. La distancia a cubrir es de 21 ¼ pies. Si usaste 42 ½ tablones puestos lado a lado, ¿qué ancho tiene cada tablón?

Comparación multiplicativa	El puente Golden Gate es 2.5 veces más largo que el puente de Brooklyn. El puente de Brooklyn tiene 1600 pies de largo. ¿Qué largo tiene el Puente Golden Gate?	¡Los trabajos de mantenimiento y reparación de un puente son caros! Una cotización señala que si se paga a una cuadrilla $125,000 al año para mantener un puente, se podría ahorrar el pago de $375,000 en reparaciones. ¿Cuántas veces más caro es reparar que mantener un puente?	Antiguamente, el Wonder Bridge en Londres se levantaba 6000 veces al año para dejar que los barcos pasen navegando a través de él. Era 12 veces más que las que se levanta ahora al año. ¿Cuántas veces al año se levanta el Wonder Bridge hoy en día?

Materials
- 7 pieces of large construction paper
- EiE Engineering Design Process Posters ordered from http://www.eiestore.com/posters.html
- rope strong enough to play "tug-o-war"

Literature Selection
Bridges! Amazing Structures to Design, Build, and Test
by Carol A. Johmann and Elizabeth J. Rieth
p.4-10 and p.16-19

Math and Literature Vocabulary
technology
engineer
architect
environmentalist
load
dam
suspension

Unit 6, Lesson 1 — Grades 5-6

Classroom Lesson

Every day teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

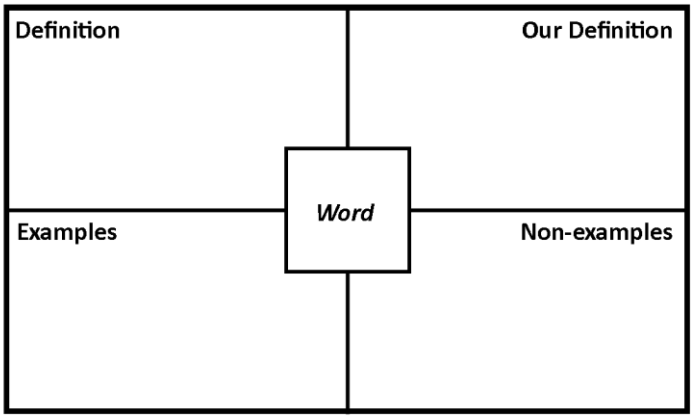
Math Objectives:
- Identify math in everyday situations.
- Explain and record observations using objects, words, pictures, numbers and technology.
- Make generalizations from patterns or sets of examples and non-examples.
- Justify why an answer is reasonable and explain the solution process.

Language Objectives:
- Listen to classmates and to teacher discuss and read.
- Speak, read and write vocabulary words in context.
- Brainstorm and discuss the various problems given.
- Create a chart of sorted items and explain how you decided to sort them.
- Create a list of things to do before building a skyscraper can begin.
- Justify your conclusions based on the results of your investigations.

Science Objectives:
- Demonstrate safe practices and the use of safety equipment as needed during investigations.
- Plan and implement descriptive investigations, including asking well-defined questions, making inferences, and selecting and using appropriate equipment or technology to answer the questions.
- Collect and record data by observing and measure, using descriptive words and numerals such as labeled drawing, writing, and concept maps.
- Analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured.
- Communicate valid, oral and written results supported by data
- Brainstorm and discuss the various problems given.
- Generate charts to describe the outcomes of investigations.

Building Background
Students will create Frayer Models for the vocabulary words in this unit. The examples and non-examples must be relatable to the actual vocabulary word. For instance, a purple elephant is a non-example of "perimeter." However, the purple elephant does not help us understand what perimeter actually is. A more appropriate non-example could be the tiles on the kitchen floor. That is an example for "area;" a common misconception for students.

Comprehensible Input
Use the large construction paper to create the Frayer model posters. Each poster should be divided into the sections shown in the diagram below.



Sections:
1. Word – vocabulary word is written in the middle
2. Definition – "text book" definition, formal
3. Our Definition – definition in "your own words," still accurate
4. Examples – pictures or words explaining what IT IS
5. Non-examples – pictures or words explaining what IT IS NOT

Complete for each vocabulary word.

Figure 1

Building Background - Literature
Remind returning students (6th graders) that they built bridges from this book during the previous summer program. This year is an extension from those projects. The concepts will be reviewed in the beginning for new students.

Introduce the EiE Engineering Design Process Posters one-by-one and discuss what each step means. Explain that the process does not necessarily have a start and finish where each step is done in sequence. They will move through the steps in the process fluidly and may need to jump from one to another. Shown in Figure 1.

Unit 6, Lesson 1 — Grades 5-6

Classroom Lesson - continued

Design Process

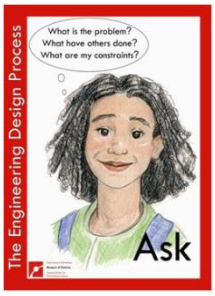
Ask -	What is the problem? What have others done already? What are my constraints?
Imagine -	What are some solutions? Brainstorm ideas. Choose the best idea.
Plan -	Draw a diagram. Make a list of materials we will need.
Create -	Follow the plan. Build the design. Test it out.
Improve -	How can we make the design better? Try again?

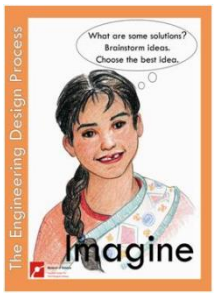
Comprehensible Input - Literature

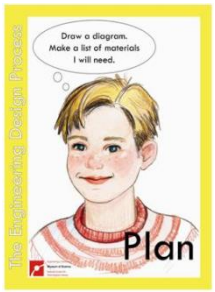
Read pgs.4-10 in the literature selection, stopping to discuss the questions on pg. 6 with students. Additional questions could be:

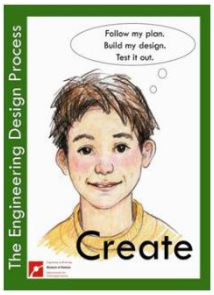
- Why does that bridge building job appeal to you?
- What skills do you already possess that will help you with that job?
- Are there any other bridge building jobs you might like to try?

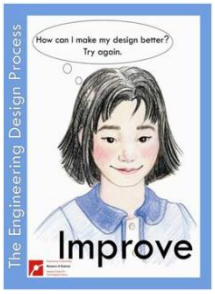
After discussing the many jobs that are needed when building a structure of this magnitude, read pages17-19. Tell students they will practice how forces work on bridges during the Transition to Math lessons during this unit.











Unit 6, Lesson 1 — Grades 5-6

Classroom Lesson - continued

Transition to Math

Read pages12-13 and perform the activity, Be a Suspension Bridge Cable. Divide the class into two teams *(do not have to be exact)* and explain that they are NOT playing tug-o-war to make the other team fall down. The goal is to pull as hard as your team can pull WITHOUT making the other team fall.

Repeat the activity with different *teams (boys vs. girls, girls vs. girls, boys vs. boys, teacher vs class, few students vs. many, etc.)*. Discuss the observations made by the teams after each trial.

- Did you have to pull hard or ease up? Why?
- Was it difficult to keep everyone in balance? Why or why not?
- Could you feel the tension?
- Could you feel the push and pull?
- What was your strategy to keep the other team from falling?

Explain to students that they will watch the TV Teacher demonstrate how to perform the bridge project for Follow-up Lesson 1.

Objectives

Read through the math and language objectives, making sure that students understand how they accomplished each.

technology

engineer

architect

environmentalist

Duplicate on cardstock and cut apart for word cards.

load

force

dam

suspension

Duplicate on cardstock and cut apart for word cards.

technología
ingeniero
arquitecto
ambientalista

carga

fuerza

presa

suspensión

Materials
- pan
- sand or dirt
- water
- Popsicle sticks (at least 30 per group)
- masking or painter's tape
- plastic wrap
- turkey baster (or eye dropper)
- **BLM** Cofferdam Instructions

Math and Literature Vocabulary
technology
engineer
architect
environmentalist
load
dam
suspension

Teacher Note
2012-2013 Math Matters Program STEM Projects
- Pile It On (pgs.20-21)
- Making Concrete (pgs.26-28)
- Flood Control (pg.34)
- Build an Amazing Truss Bridge (pgs.41-42)

Unit 6, Lesson 1 — Grades 5-6

TV Lesson

Math Objectives:
- Identify math in everyday situations.
- Explain and record observations using objects, words, pictures, numbers and technology.
- Make generalizations from patterns or sets of examples and non-examples.
- Justify why an answer is reasonable and explain the solution process.

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- Analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured.
- Communicate valid, oral and written results supported by data
- Brainstorm and discuss the various problems given.
- Generate charts to describe the outcomes of investigations.

Building Background
Students read through the basics of different bridges during the Classroom Lesson and practiced how forces work on a suspension bridge during Transition to Math.

The 2013 summer program projects are listed in the sidebar. Please feel free to integrate or supplement the previously mentioned projects into the curriculum should your class have minimal or no experience with them. Please refer to the literature selection for materials lists and procedures.

Teacher Note
Captain Portio will introduce more basic information about cofferdams.
http://en.wikipedia.org/wiki/Cofferdam

"A **cofferdam** (also called a **coffer**[1]) is a temporary enclosure built within, or in pairs across, a body of water and constructed to allow the enclosed area to be pumped out, creating a dry work environment for the major work to proceed. Enclosed coffers are commonly used for construction and repair of oil platforms, bridge piers and other support structures built within or over water. These cofferdams are usually welded steel structures, with components consisting of sheet piles, wales, and cross braces. Such structures are typically dismantled after the ultimate work is completed."

Unit 6, Lesson 1 — Grades 5-6

TV Lesson - continued

Comprehensible Input
Review the Engineering Design Process posters.

Students will build a cofferdam during Follow-up Lesson 1. Read the introduction to cofferdams on page 29 of the literature selection.

Building the Cofferdam (taken directly from *Bridges!* p. 29)

1) Fill the pan halfway with sand or dirt. Add water about an inch (2.5 cm) above that.
2) Use a third of the Popsicle sticks to make the inside ring of the dam. Push each stick through the sand to the bottom of the pan. The sticks should tough each other and be higher than the water.
3) Run a piece of tape along the top of the ring on the inside. Put a second ring around the first using the rest of the Popsicle sticks, leaving about a half-inch (1 cm) space between. Tape along the outside of the second ring.
4) Twist a piece of plastic wrap and snake it around the space, stuffing it down as you go until you fill the space higher than the water. Fix the sticks if they moved.
5) Remove the water inside the inner ring with the baster.

Pirate's Corner
Upload pictures of your cofferdams to MAS Space and share your experiences! Was it hard? Easy? Were you able to get the bottom completely dry? Did you run into any struggles? Did you have to make adjustments to your design?

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 6 Lesson 1 – TV Lesson and Follow-up
One per group

Cofferdam - Instructions

Materials:

- pan
- sand or dirt
- water
- Popsicle sticks (at least 30)
- masking or painter's tape
- plastic wrap
- turkey baster (or eye dropper)

Instructions:

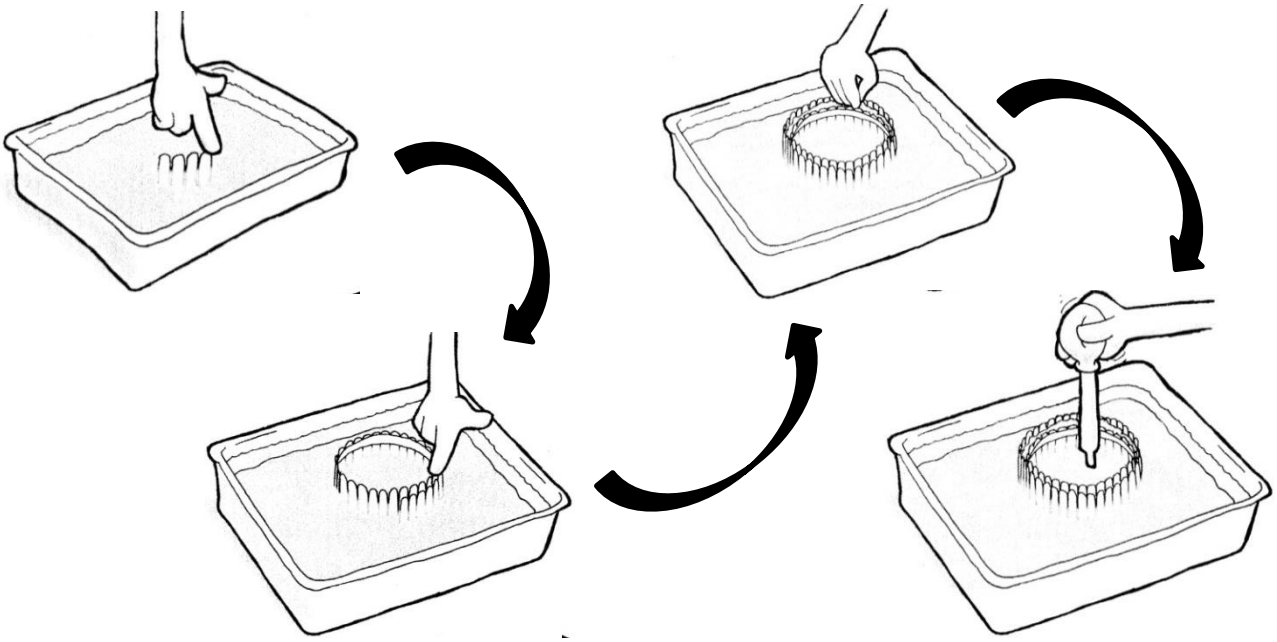
1) Fill the pan halfway with sand or dirt. Add water about an inch (2.5 cm) above that.

2) Use a third of the Popsicle sticks to make the inside ring of the dam. Push each stick through the sand to the bottom of the pan. The sticks should touch each other and be higher than the water.

3) Run a piece of tape along the top of the ring on the inside. Put a second ring around the first using the rest of the Popsicle sticks, leaving about a half-inch (1 cm) space between. Tape along the outside of the second ring.

4) Twist a piece of plastic wrap and snake it around the space, stuffing it down as you go until you fill the space higher than the water. Fix the sticks if they moved.

5) Remove the water inside the inner ring with the baster.



**images used from Bridges! Amazing Structures to Design, Build and Test pgs.29-30*

Materials
- pan
- sand or dirt
- water
- Popsicle sticks (at least 30 per group)
- masking or painter's tape
- plastic wrap
- turkey baster (or eye dropper)

BLM Cofferdam Instructions

Math and Literature Vocabulary
technology
engineer
architect
environmentalist
load
dam
suspension

Unit 6, Lesson 1 Grades 5-6

Follow-up

Math Objectives:
- Identify math in everyday situations.
- Explain and record observations using objects, words, pictures, numbers and technology.
- Make generalizations from patterns or sets of examples and non-examples.
- Justify why an answer is reasonable and explain the solution process.

Language Objectives:
- Listen to classmates and to teacher discuss and read.
- Speak, read and write vocabulary words in context.
- Brainstorm and discuss the various problems given.
- Create a chart of sorted items and explain how you decided to sort them.
- Create a list of things to do before building a skyscraper can begin.
- Justify your conclusions based on the results of your investigations.

Science Objectives:
- Demonstrate safe practices and the use of safety equipment as needed during investigations.
- Plan and implement descriptive investigations, including asking well-defined questions, making inferences, and selecting and using appropriate equipment or technology to answer the questions.
- Collect and record data by observing and measure, using descriptive words and numerals such as labeled drawing, writing, and concept maps.
- Analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured.
- Communicate valid, oral and written results supported by data
- Brainstorm and discuss the various problems given.
- Generate charts to describe the outcomes of investigations.

Practice and Application

Divide class into groups of three-four and distribute materials. Review the activity again making sure to address any questions or concerns.

Students will follow the directions provided on BLM Cofferdam - Instructions.

Document the process by taking pictures of student groups working on the project.

Unit 6, Lesson 1 — Grades 5-6

Follow-up - continued

Monitor students groups, stopping to ask thought provoking questions.

QUESTIONS

- What do you predict will happen if there are gaps in the Popsicle sticks?
- How is your design working?
- Do you need to make any adjustments?
- Is there a leak? If so, how do you think you can fix it?
- What steps of the design process have you gone through?
- What step of the design process are you on right now?
- Can you think of other ways the concept of the cofferdam could be used in real life?

Take pictures of the final products build by the students.

Recursive Review
omitted

Writing Topics
Independent Writing Topic
omitted

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Materials

- Energy Balls (homemade or store prepared – recipe provided)

Allergy Warning – please substitute a different mix for the entire class if nut allergies are present.

- quart sized sandwich bag
- 4 paper plates
- 4 paper towels
- 4 plastic knives

All items listed above per group of four

Math and Literature Vocabulary

technology
engineer
architect
environmentalist
load
dam
suspension

Unit 6, Lesson 1 — Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Math Objectives

- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents.
- Convert between fractions, decimals, and percents.
- Estimate to find solutions to problems involving fractions, decimals, and percents.

Language Objectives

- Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.

Snack Fractions

Snack Fractions will be simple during this unit because of the extensive project design in the main lesson pieces. Students simply share and answer orally administered questions *(examples provided)*.

The Snack Fraction activities for this lesson will focus on combining and separating fractional parts as well as dividing into eighths. Teacher will facilitate mathematical conversations during this lesson instead of providing a record sheet to students.

Energy Balls Recipe:

- 1 cup choc chips
- ½ c oatmeal
- ½ c crunchy peanut butter
- ½ c nuts or sunflower seeds
- 1 T honey
- Wheat germ (optional)

Prior to lesson, mix all ingredients and store in sandwich baggies *(one per group of four)*. Students will divide the mixture between four people in their group. But each person needs to receive two energy balls. Once snack is divided equally, students form their portion into two small balls and roll in the wheat germ.

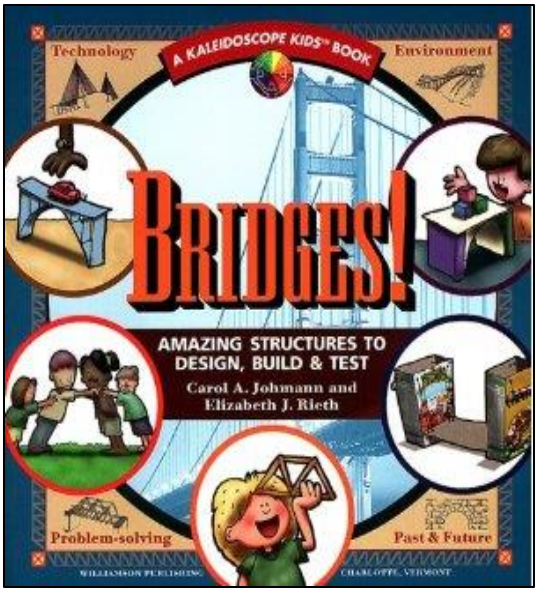
QUESTIONS

- How do I break this up into equal shares?
- What does that fraction represent?
- Does this fraction have an easily calculated decimal equivalent?
- How can you find the decimal of this fraction?
- How did you calculate the percent?
- What is the fractional representation of your share and one more friend combined? Two more friends?

	Unit 6, Lesson 1 **Grades 5-6** **Snack Fractions -** continued --- Once the activity is complete, let them enjoy their snack! **Snack Fraction Journal Writing: BLM Energy Balls-Snack Fractions** *omitted* **Objectives** Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 6 Lesson 1 – Family Fun

Dear _____,



We read ***Bridges! Amazing Structures to Design, Build and Test***
by Carol A. Johmann and Elizabeth J Rieth.

The structure we designed and built today was a…

_____

It is used when…

_____

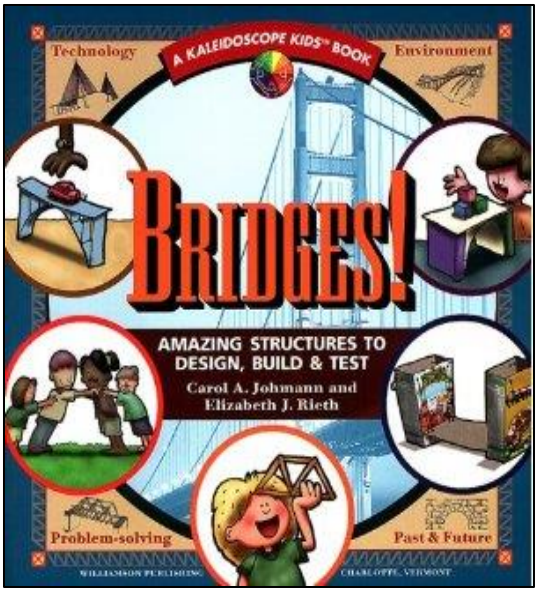
_____

Sincerely,

_____

Unit 6 Lesson 1 – Family Fun

Dear _____,



Leímos ***Bridges! Amazing Structures to Design, Build and Test*** *por* Carol A. Johmann y Elizabeth J Rieth.

La estructura que diseñamos y construímos hoy fue…

_____

Se usa cuando…

_____

_____

Atentamente,

_____

Materials
- **BLM** Fraction Action and *X* Marks the Spot
- **BLM** Lessons 2-3 CGI *Bridges! Amazing Structures to Design, Build and Test*

Math Objectives
- Model and solve multistep word problems.
- Solve problems involving fractions, ratios, and proportions.

Language Objectives
- Speak to partners, teacher, and class using vocabulary.
- Discuss problem solving process and strategies.

Math and Literature Vocabulary
technology
engineer
architect
environmentalist
load
dam
suspension

Assessed TEKS for this Unit
5th – 5.3H, 5.3K
6th – 6.4C, 6.4D, 6.4E, 6.5B, 6.5C

Unit 6, Lesson 2 Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post-assessment. They are not optional.

ESSENTIAL

Measurement Lab
omitted

Solve It! Multi-step problem solving
omitted

Fraction Action
- Lesson 1 – *omitted*
- **Lesson 2 – (5th assessment item 1,2,3)**
- Lesson 3 – (5th assessment item 6) *mixed

***X* Marks the Spot**
- Lesson 1 – *omitted*
- **Lesson 2 – (6th assessment item 2)**
- Lesson 3 – (6th assessment item 8) *tip

CGI
- Lesson 1 – omitted
- **Lesson 2 – Compare Referent Unknown (5th assessment item 5)**
- Lesson 3 – Price Partitive Division (6th assessment item 6)

The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.

OPTIONAL

Target Number
omitted

Money Matters
(*If you have a full program and wish to use this optional activity, you will find BLMs and Explanations on MAS Space.)*

Unit 6 Lesson 2 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

$$3\frac{1}{2} - \frac{3}{8} = ?$$

X Marks the Spot

Solve for x (approximate answer may be given in fraction or decimal form)

$$33\frac{1}{3}\% \text{ of } 1 = x$$

Materials
- computer with Internet access (1 per class or 1 per pair of students)
- printer
- **BLM** My Suspension Bridge Template

Literature Selection
Bridges! Amazing Structures to Design, Build, and Test
by Carol A. Johmann and Elizabeth J. Rieth
p.52, p.54-56, and p.58-59

Math and Literature Vocabulary
technology
engineer
architect
environmentalist
load
dam
suspension

Unit 6, Lesson 2 Grades 5-6

Classroom Lesson

Every day teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

Math Objectives:
- Identify math in everyday situations.
- Explain and record observations using objects, words, pictures, numbers and technology.
- Make generalizations from patterns or sets of examples and non-examples.
- Justify why an answer is reasonable and explain the solution process.

Language Objectives:
- Listen to classmates and to teacher discuss and read.
- Speak, read and write vocabulary words in context.
- Brainstorm and discuss the various problems given.
- Create a chart of sorted items and explain how you decided to sort them.
- Create a list of things to do before building a skyscraper can begin.
- Justify your conclusions based on the results of your investigations.

Science Objectives:
- Demonstrate safe practices and the use of safety equipment as needed during investigations.
- Plan and implement descriptive investigations, including asking well-defined questions, making inferences, and selecting and using appropriate equipment or technology to answer the questions.
- Collect and record data by observing and measure, using descriptive words and numerals such as labeled drawing, writing, and concept maps.
- Analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured.
- Communicate valid, oral and written results supported by data
- Brainstorm and discuss the various problems given.
- Generate charts to describe the outcomes of investigations.

Building Background
Review Frayer model vocabulary posters created in lesson 1. Make any additions to the examples and non-examples if suggested by students.

Building Background - Literature
Transition to Math Lesson 1 activity allowed students to explore the forces on a suspension bridge using rope and their bodies. Today they will read more about suspension bridges and research famous bridges in the US online.

Teacher Note
If computers or Internet access are not available, please compile information/articles of different well known suspension bridges in the United States PRIOR to the lesson. Distribute the materials to different pairs/groups. Students will use the information you gathered to create a snapshot of their suspension bridge.

Technology
Students may want to visit their bridges using Google Earth.

Unit 6, Lesson 2 — Grades 5-6

Classroom Lesson - continued

Comprehensible Input - Literature
After reading the selected passages from ***Bridges!***, divide the class into pairs and assign them a state from pages 91-92 that has a suspension bridge *(noted in list)*. Pairs are to use www.google.com to research the suspension bridge from the state they are responsible for. Students will use the template provided as a guide to create a snapshot of important information regarding their chosen bridge.

Pairs may use a program such as Microsoft Word or Publisher to create the snapshot or the website https://thimble.webmaker.org/project/20795/remix to create a meme for their bridge. The meme must meet all of the requirements of the snapshot.

Groups will present their snapshots and add any other interesting facts they discovered during their research. Display snapshots in the classroom or on the word wall.

Transition to Math
Students will learn about how the forces work on an arch bridge through the activity, Be A Stone in an Arch Bridge, page 14. Divide the class into two teams *(do not have to be exact)* and explain that just like the activity during Transition to Math lesson 1, they are NOT trying to make the other team fall down. The goal is to push toward the center as much as possible WITHOUT making the other team fall. They must create opposite but equal forces.

Repeat the activity with different teams *(boys vs. girls, girls vs. girls, boys vs. boys, teacher vs. class, few students vs. many, etc.)*. Discuss the observations made by the teams after each trial.

- Was it difficult to keep everyone in balance? Why or why not?
- Could you feel the opposite force?
- What was your strategy to keep the other team from falling?
- What adjustments to your force did your team make when you were considered the stronger side?

Explain to students that they will watch the TV Teacher demonstrate how to perform the bridge project for Follow-up Lesson 2. Even though they just completed an activity over forces on an arch bridge, they will return their attention to suspension bridges for the remainder of Lesson 2.

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 6 Lesson 2 – Classroom Lesson
One per pair/group

My Suspension Bridge Template

Work with your partner to research the suspension bridge assigned to you and record the requested information.

PICTURE

Name: _____

Type: _____

Built: _____

Length: _____

Location: _____

Creator: _____

Interesting facts: _____
_____
_____
_____
_____

Materials
- 2 kitchen chairs (or any chair that is similar in size and shape)
- spool of heavy string
- 4 heavy books
- masking tape
- cardboard (at least 1ft x 3ft)
- scissors
- single hole punch
- spool of thread or light string
- load (of choice – object available in room)
- **BLM** Hang a Suspension Bridge Instructions

Math and Literature Vocabulary
technology
engineer
architect
environmentalist
load
dam
suspension

Teacher Note
2012-2013 Math Matters Program STEM Projects
- Pile It On (pgs. 20-21)
- Making Concrete (pgs. 26-28)
- Flood Control (pg. 34)
- Build an Amazing Truss Bridge (pgs. 41-42)

Unit 6, Lesson 2 — Grades 5-6

TV Lesson

Math Objectives:
- Identify math in everyday situations.
- Explain and record observations using objects, words, pictures, numbers and technology.
- Make generalizations from patterns or sets of examples and non-examples.
- Justify why an answer is reasonable and explain the solution process.

Language Objectives:
- Listen to classmates and to teacher discuss and read.
- Speak, read and write vocabulary words in context.
- Brainstorm and discuss the various problems given.
- Create a chart of sorted items and explain how you decided to sort them.
- Create a list of things to do before building a skyscraper can begin.
- Justify your conclusions based on the results of your investigations.

Science Objectives:
- Demonstrate safe practices and the use of safety equipment as needed during investigations.
- Plan and implement descriptive investigations, including asking well-defined questions, making inferences, and selecting and using appropriate equipment or technology to answer the questions.
- Collect and record data by observing and measure, using descriptive words and numerals such as labeled drawing, writing, and concept maps.
- Analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured.
- Communicate valid, oral and written results supported by data
- Brainstorm and discuss the various problems given.
- Generate charts to describe the outcomes of investigations.

Building Background
Students have read through the basics of different bridges, researched well known suspension bridges in the United States, and practiced how forces work on suspension and arch bridges during the Transition to Math activities.

The 2013 summer program projects are listed in the sidebar. Please feel free to integrate or supplement the previously mentioned projects into the curriculum should your class have minimal or no experience with them. Please refer to the literature selection for materials lists and procedures.

Teacher Note
Captain Portio will introduce information from ***Bridges!***, on p. 64.

Unit 6, Lesson 2 — Grades 5-6

TV Lesson - continued

Comprehensible Input
Review the Engineering Design Process posters.

Students will hang a suspension bridge during Follow-up Lesson 2.

Hanging a Suspension Bridge (taken directly from ***Bridges!***, p. 60)

1) Set up your towers *(the chairs)* on a rug *[if available]*. The foundation of your bridge will be the floor. Place the chairs back-to-back, as far apart as your arms can reach.
2) Tie the end of a heavy string to a book, which will act as an anchor. Put the book on one chair. Loop the string around the top of the chair and bring it to the other chair. Loop the string around the top of that chair, letting it sag in a curve between the chairs.
3) Cut the string and tie it around another book. Put the book on the other chair. Push this string to one side of the chairs. Make another cable in the same way on the other side. Tie it to the same books as the other one, making sure the two cables are even. The strings between the books and the chairs should be tight. If the string slips off the chairs, tape it in place.
4) Cut and tape cardboard to make a roadway long enough to reach farther than from book to book. It should be slightly wider than the distance between the cables. Lay the deck in place on the books, and put a third book on top. *[add another book as a weight to the opposite side – 4 books total]*
5) For hangers, tie pieces of thread along the length of both cables. Make them long enough so they hang below the deck.
6) Punch holes along the deck where the hangers fall; then, thread a hanger through each hole. Tie them so the hangers are taut and the cardboard deck is level.
7) Now, put a load on your bridge.

Questions

- Can you see the tension in the cables and hangers?
- Does the string get tight?
- Do the anchors *(books)* move?
- If they do, how could you keep them in place?
- Does the deck sag?
- If it does, how could you make it stiffer?

Optional - Students may also test their bridges in the wind by putting a fan next to it and blowing air at different speeds.

	Unit 6, Lesson 2 **Grades 5-6** **TV Lesson** - continued --- **Pirate's Corner** Upload pictures of your suspension bridges to MAS Space and share your experiences! Was it hard? Easy? Was your bridge strong enough to support a load? If so, how heavy? Did you run into any struggles? Did you have to make adjustments to your design? **Objectives** Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 6 Lesson 2 – TV Lesson and Follow-up
One per group

Hang a Suspension Bridge - Instructions

Materials:

- 2 kitchen chairs (or any chair that is similar in size and shape)
- spool of heavy string
- 4 heavy books
- masking tape
- cardboard (at least 1ft x 3ft)
- scissors
- single hole punch
- spool of thread or light string
- load (of choice – object available in room)

Instructions:

1) Set up your towers (the chairs) on a rug [if available]. The foundation of your bridge will be the floor. Place the chairs back-to-back, as far apart as your arms can reach.

2) Tie the end of the heavy string to a book, which will act as an anchor. Put the book on one chair. Loop the string around the top of the chair and bring it to the other chair. Loop the string around the top of that chair, letting it sag in a curve between the chairs.

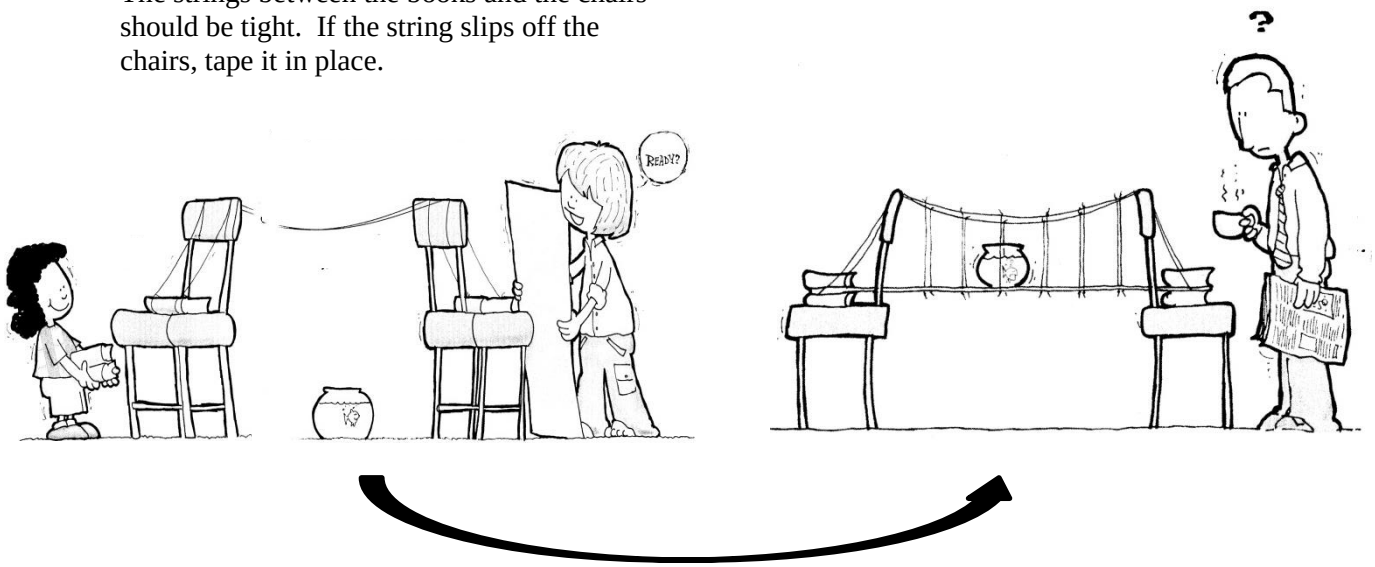
3) Cut the string and tie it around another book. Put the book on the other chair. Push this string to one side of the chairs. Make another cable in the same way on the other side. Tie it to the same books as the other one, making sure the two cables are even. The strings between the books and the chairs should be tight. If the string slips off the chairs, tape it in place.

4) Cut and tape cardboard to make a roadway long enough to reach farther than from book to book. It should be slightly wider than the distance between the cables. Lay the deck in place on the books, and put a third book on top. [add another book as a weight to the opposite side – 4 books total]

5) For hangers, tie pieces of thread along the length of both cables. Make them long enough so they hang below the deck.

6) Punch holes along the deck where the hangers fall; then, thread a hanger through each hole. Tie them so the hangers are taut and the cardboard deck is level.

7) Now, put a load on your bridge.



**images used from Bridges! Amazing Structures to Design, Build and Test pgs.61-62*

Materials

- 2 kitchen chairs (or any chair that is similar in size and shape)
- spool of heavy string
- 4 heavy books
- masking tape
- cardboard (at least 1ft x 3ft)
- scissors
- single hole punch
- spool of thread or light string
- load (of choice – object available in room)
- **BLM** Hang a Suspension Bridge Instructions

Math and Literature Vocabulary

technology
engineer
architect
environmentalist
load
dam
suspension

Unit 6, Lesson 2 — Grades 5-6

Follow-up

Math Objectives:

- Identify math in everyday situations.
- Explain and record observations using objects, words, pictures, numbers and technology.
- Make generalizations from patterns or sets of examples and non-examples.
- Justify why an answer is reasonable and explain the solution process.

Language Objectives:

- Listen to classmates and to teacher discuss and read.
- Speak, read and write vocabulary words in context.
- Brainstorm and discuss the various problems given.
- Create a chart of sorted items and explain how you decided to sort them.
- Create a list of things to do before building a skyscraper can begin.
- Justify your conclusions based on the results of your investigations.

Science Objectives:

- Demonstrate safe practices and the use of safety equipment as needed during investigations.
- Plan and implement descriptive investigations, including asking well-defined questions, making inferences, and selecting and using appropriate equipment or technology to answer the questions.
- Collect and record data by observing and measure, using descriptive words and numerals such as labeled drawing, writing, and concept maps.
- Analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured.
- Communicate valid, oral and written results supported by data
- Brainstorm and discuss the various problems given.
- Generate charts to describe the outcomes of investigations.

Divide class into groups of three-four and distribute materials. Review the activity again making sure to address any questions or concerns.

Students will follow the directions provided on BLM Hanging a Suspension Bridge - Instructions.

Document the process by taking pictures of student groups working on the project.

Unit 6, Lesson 2 — Grades 5-6

Follow-up - continued

Monitor students groups, stopping to ask thought provoking questions.

QUESTIONS

- What do you predict will happen if the cables aren't taut?
- How is your design working?
- Do you need to make any adjustments?
- Is your deck straight and well supported? Why or why not?
- What steps of the design process have you gone through?
- What step of the design process are you on right now?

Take pictures of the final products build by the students.

Recursive Review
omitted

Writing Topics
Independent Writing Topic
omitted

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Materials
- 1 oz. turkey
- 1 slice Swiss cheese
- 1 leaf lettuce
- 1 TBS cranberry relish
- 1 burrito sized tortilla
- 2 paper dessert plates
- 2 paper towels
- 2 plastic knives

All items listed above per partner pair

Math and Literature Vocabulary
technology
engineer
architect
environmentalist
load
dam
suspension

Unit 6, Lesson 2 — Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents.
- Convert between fractions, decimals, and percents.
- Estimate to find solutions to problems involving fractions, decimals, and percents.

Language Objectives
- Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.

Snack Fractions
Snack Fractions will be simple during this unit because of the extensive project design in the main lesson pieces. Students simply share and answer orally administered questions *(examples provided)*.

The Snack Fraction activities for this lesson will focus on dividing into halves. Teacher will facilitate mathematical conversations during this lesson instead of providing a record sheet to students.

Students will divide ingredients equally between partners and build their turkey wrap.

QUESTIONS
- What is the whole in this situation?
- How did you break this up into equal shares if some of the ingredients are different shapes and textures?
- Does this fraction have an easily calculated decimal equivalent?
- How can you find the decimal of this fraction?
- How did you calculate the percent?
- What would happen if one more person joined your group?

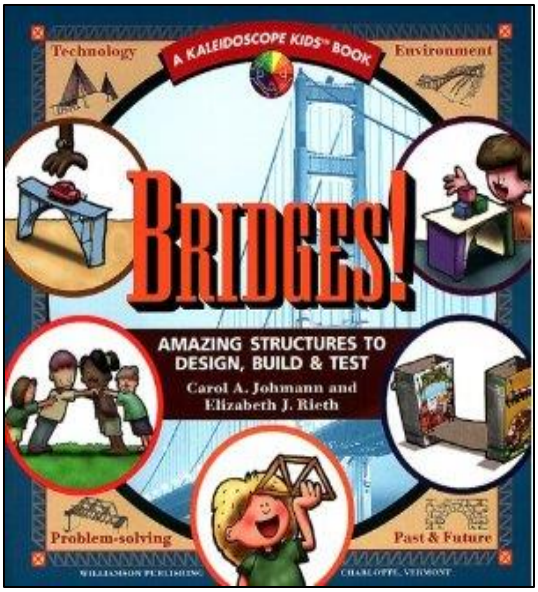
Once the activity is complete, let them enjoy their snack!

Snack Fraction Journal Writing: BLM Turkey Wrap-Snack Fractions
omitted

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 6 Lesson 2 – Family Fun

Dear _____,



We did another project from the book ***Bridges! Amazing Structures to Design, Build and Test*** by Carol A. Johmann and Elizabeth J Rieth.

The structure we designed and built today was a…

_____

A cofferdam could have been used to help build the suspension bridge because…

_____

_____

Sincerely,

_____

Materials
- **BLM** Fraction Action and *X* Marks the Spot
- **BLM** Lessons 2-3 CGI *Bridges! Amazing Structures to Design, Build and Test*

Math Objectives
- Model and solve multistep word problems.
- Solve problems involving fractions, ratios, and proportions.

Language Objectives
- Speak to partners, teacher, and class using vocabulary.
- Discuss problem solving process and strategies.

Math and Literature Vocabulary
technology
engineer
architect
environmentalist
load
dam
suspension

Assessed TEKS for this Unit
5th – 5.3H, 5.3K
6th – 6.4C, 6.4D, 6.4E, 6.5B, 6.5C

Unit 6, Lesson 3 — Grades 5-6

Daily Routine

The following daily activities will help prepare your students for the Post-assessment. They are not optional.

ESSENTIAL

Measurement Lab
omitted

Solve It! Multi-step problem solving
omitted

Fraction Action
- Lesson 1 – *omitted*
- Lesson 2 – (5th assessment item 1,2,3)
- **Lesson 3 – (5th assessment item 6)**

***X* Marks the Spot**
- Lesson 1 – *omitted*
- Lesson 2 – (6th assessment item 2)
- **Lesson 3 – (6th assessment item 8)**

CGI
- Lesson 1 – omitted
- Lesson 2 – Compare Referent Unknown (5th assessment item 5)
- **Lesson 3 – Price Partitive Division (6th assessment item 6)**

The following activities, although certainly developmentally appropriate for your 5th and 6th grade students, do not specifically address objectives assessed on the Post-assessment. Schools with shorter teaching spans can consider omitting some or all these activities as your time permits.

OPTIONAL

Target Number
omitted

Money Matters
(*If you have a full program and wish to use this optional activity, you will find BLMs and Explanations on MAS Space.)*

Unit 6 Lesson 3 – Daily Routines – Fraction Action and *X* Marks the Spot
One per student

Fraction Action

**approximate thirds*

$$10.33 + 8\frac{5}{6} - 4\frac{1}{2} = ?$$

X Marks the Spot

Solve for x (percent of tip)

Joel left an extra $15 tip on a bill that was originally $45. What percent ($x$) of the original bill was the tip?
Joel pagó una propina $15 de su factura de $45. ¿Qué porcentaje de la factura representó la propina?

Materials
- computer with Internet access (1 per class or 1 per pair of students)
- printer
- **BLM** My Bridge that Lifts Template

Literature Selection
Bridges! Amazing Structures to Design, Build, and Test
by Carol A. Johmann and Elizabeth J. Rieth
p. 68, p. 70, and top of p. 71

Math and Literature Vocabulary
technology
engineer
architect
environmentalist
load
dam
suspension

Unit 6, Lesson 3 — Grades 5-6

Classroom Lesson

Every day teachers must post the objectives on the board, read them to the students, and have students read them together with the teacher. At the end of the lesson, teacher and students should review to see if they have accomplished both math and language objectives.

Math Objectives:
- Identify math in everyday situations.
- Explain and record observations using objects, words, pictures, numbers and technology.
- Make generalizations from patterns or sets of examples and non-examples.
- Justify why an answer is reasonable and explain the solution process.

Language Objectives:
- Listen to classmates and to teacher discuss and read.
- Speak, read and write vocabulary words in context.
- Brainstorm and discuss the various problems given.
- Create a chart of sorted items and explain how you decided to sort them.
- Create a list of things to do before building a skyscraper can begin.
- Justify your conclusions based on the results of your investigations.

Science Objectives:
- Demonstrate safe practices and the use of safety equipment as needed during investigations.
- Plan and implement descriptive investigations, including asking well-defined questions, making inferences, and selecting and using appropriate equipment or technology to answer the questions.
- Collect and record data by observing and measure, using descriptive words and numerals such as labeled drawing, writing, and concept maps.
- Analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured.
- Communicate valid, oral and written results supported by data
- Brainstorm and discuss the various problems given.
- Generate charts to describe the outcomes of investigations.

Building Background
Review Frayer model vocabulary posters created in lesson 1. Make any additions to the examples and non-examples if suggested by students.

Review some of the suspension bridge snapshots created by the students in Lesson 2.

Teacher Note
If computers or Internet access are not available, please compile information/articles of different well known suspension bridges in the United States PRIOR to the lesson. Distribute the materials to different pairs/groups. Students will use the information you gathered to create a snapshot of their suspension bridge.

Technology
Students may want to visit their bridges using Google Earth.

Unit 6, Lesson 3 — Grades 5-6

Classroom Lesson - continued

Building Background - Literature
Transition to Math Lesson 1 and 2 activities allowed students to explore the forces on a suspension and an arch bridge. Today they will read about bridges that move *(or lift)* and research famous bridges around the world online.

Comprehensible Input - Literature
Repeat activity from Lesson 2, but globally. After reading the selected passages from ***Bridges!***, divide the class into pairs and assign them a state or country from pages 91-92 that has a moveable bridge *(noted in list)*. Pairs are to use www.google.com to research the moveable bridge from the state or country they are responsible for. Students will use the template provided as a guide to create a snapshot of important information regarding their chosen bridge.

Pairs may use a program such as Microsoft Word or Publisher to create the snapshot or the website https://thimble.webmaker.org/project/20795/remix to create a meme for their bridge. The meme must meet all of the requirements of the snapshot.

Groups will present their snapshots and add any other interesting facts they discovered during their research. Display snapshots in the classroom or on the word wall.

Transition to Math
Students will continue to learn about how forces work on bridges through the activity, Balance Like a Bridge, page 14. Divide the class into two teams *(do not have to be exact)* and explain that just like the activity during Transition to Math lesson 1 and 2, they are NOT trying to make the other team fall down or throw them off balance. The goal is to balance as much as possible WITHOUT making the other team fall. They must create opposite but equal forces.

Repeat the activity with different teams *(boys vs. girls, girls vs. girls, boys vs. boys, teacher vs. class, few students vs. many, etc.)*. Discuss the observations made by the teams after each trial.

- Was it difficult to keep everyone in balance? Why or why not?
- Could you feel the opposite force?
- What was your strategy to keep the other team from falling?
- What adjustments to the push/pull did your team make when you were considered the stronger side?

	Unit 6, Lesson 3 **Grades 5-6** **Classroom Lesson** - continued --- Explain to students that they will watch the TV Teacher demonstrate how to perform the bridge project for Follow-up Lesson 3. They will turn their attention to bridges that move for the remainder of Lesson 3. **Objectives** Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 6 Lesson 3 – Classroom Lesson
One per pair/group

My Bridge That Lifts Template

Work with your partner to research the bridge assigned to you and record the requested information.

PICTURE

Name: _____

Type: _____

Built: _____

Length: _____

Location: _____

Creator: _____

Interesting facts: _____
_____
_____
_____
_____

Materials
- hole punch
- scissors
- string
- 2 empty cereal boxes
- 1 piece of thin cardboard (about the size of the boxes)
- drinking straw cut in half
- **BLM** Lift That Bridge! Instructions

Math and Literature Vocabulary
technology
engineer
architect
environmentalist
load
dam
suspension

Teacher Note
2012-2013 Math Matters Program STEM Projects
- Pile It On (pgs. 20-21)
- Making Concrete (pgs. 26-28)
- Flood Control (pg. 34)
- Build an Amazing Truss Bridge (pgs. 41-42)

Unit 6, Lesson 3 — Grades 5-6

TV Lesson

Math Objectives:
- Identify math in everyday situations.
- Explain and record observations using objects, words, pictures, numbers and technology.
- Make generalizations from patterns or sets of examples and non-examples.
- Justify why an answer is reasonable and explain the solution process.

Language Objectives:
- Listen to classmates and to teacher discuss and read.
- Speak, read and write vocabulary words in context.
- Brainstorm and discuss the various problems given.
- Create a chart of sorted items and explain how you decided to sort them.
- Create a list of things to do before building a skyscraper can begin.
- Justify your conclusions based on the results of your investigations.

Science Objectives:
- Demonstrate safe practices and the use of safety equipment as needed during investigations.
- Plan and implement descriptive investigations, including asking well-defined questions, making inferences, and selecting and using appropriate equipment or technology to answer the questions.
- Collect and record data by observing and measure, using descriptive words and numerals such as labeled drawing, writing, and concept maps.
- Analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured.
- Communicate valid, oral and written results supported by data
- Brainstorm and discuss the various problems given.
- Generate charts to describe the outcomes of investigations.

Building Background
Students have read through the basics of different bridges, researched well known suspension bridges in the United States, and practiced how forces and balancing works on suspension and arch bridges during the Transition to Math activities.

The 2013 summer program projects are listed in the sidebar. Please feel free to integrate or supplement the previously mentioned projects into the curriculum should your class have minimal or no experience with them. Please refer to the literature selection for materials lists and procedures.

Teacher Note
Captain Portio will introduce information from *Bridges!* on p. 72.

Unit 6, Lesson 3 — Grades 5-6

TV Lesson - continued

Comprehensible Input
Review the Engineering Design Process posters.

Students will build a bridge that lifts during Follow-up Lesson 3.

Lift That Bridge! (taken directly from *Bridges!* p. 73)

1) To prepare the bridge span, punch a hole in each corner of the cardboard.
2) To prepare the towers, cut the top flaps from each cereal box. Punch holes on the front and back of the boxes. *[4 corners]*
3) To assemble the bridge, arrange the string guide wires so the span can be raised evenly. Put string through one corner of the span and, then, through the bottom hole of one tower.
4) Bring the string up inside the tower and out a front hole on the same side. Tie the ends together tightly. Repeat for the other corner. Then, repeat for the other tower.
5) Cut two pieces of string, each about 5 feet *(1.5m)*. Tie one piece around one hole in the span. Then, lace it through the second hole at the top of the tower and out through the hole in the back. Pull the string through half a straw.
6) Feed the string through the other hole in the back of the tower and out the front. Tie it off at the hole on the other side of the span. Tie it so the straw hangs level, about 2 inches *(5cm)* down the tower. Repeat steps 5 and 6 for the other tower.
7) To make your bridge work, grasp the straws and gently pull down. Watch your bridge rise!

Questions
- Can you think of other ways to lift up your bridge?
- Can you see the tension in the cables?
- How are you keeping the span level while lifting?
- Does your bridge lift a load? How heavy?
- How can you improve this design?

Pirate's Corner
Upload pictures of your lift-bridges to MAS Space and share your experiences! Was it hard? Easy? Was your bridge strong enough to support a load? If so, how heavy? Did you run into any struggles? Did you have to make adjustments to your design?

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 6 Lesson 3 – TV Lesson and Follow-up
One per group

Lift That Bridge! - Instructions

Materials:

- hole punch
- scissors
- string
- 2 empty cereal boxes
- 1 piece of thin cardboard (about the size of the boxes)
- drinking straw cut in half

Instructions:

1) To prepare the bridge span, punch a hole in each corner of the cardboard.

2) To prepare the towers, cut the top flaps from each cereal box. Punch holes on the front and back of the boxes. [4 corners]

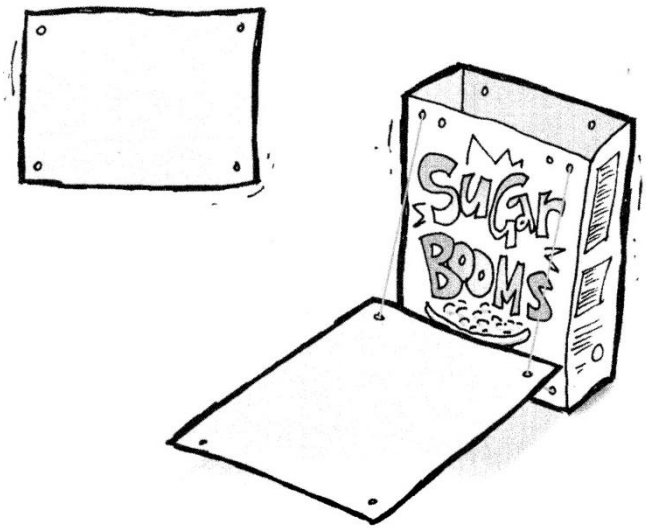
3) To assemble the bridge, arrange the string guide wires so the span can be raised evenly. Put string through one corner of the span and, then, through the bottom hole of one tower.

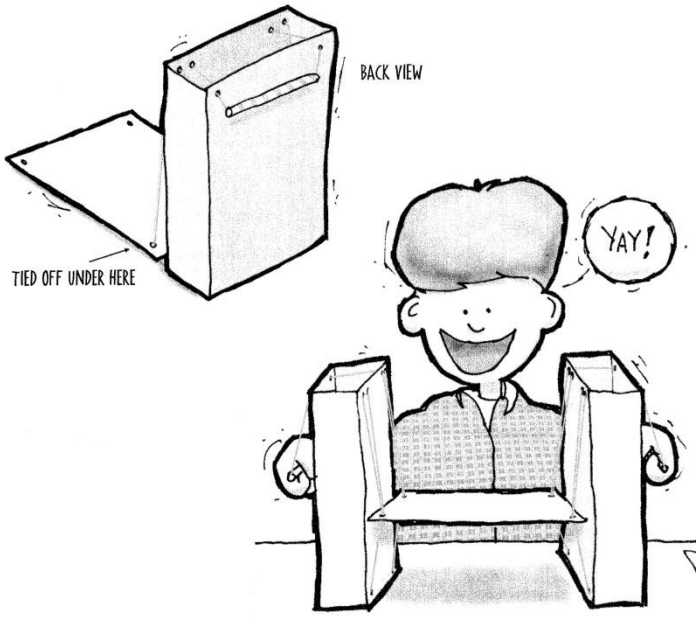
4) Bring the string up inside the tower and out a front hole on the same side. Tie the ends together tightly. Repeat for the other corner. Then, repeat for the other tower.

5) Cut two pieces of string, each about 5 feet (1.5m). Tie one piece around one hole in the span. Then, lace it through the second hole at the top of the tower and out through the hole in the back. Pull the string through half a straw.

6) Feed the string through the other hole in the back of the tower and out the front. Tie it off at the hole on the other side of the span. Tie it so the straw hangs level, about 2 inches (5cm) down the tower. Repeat steps 5 and 6 for the other tower.

7) To make your bridge work, grasp the straws and gently pull down. Watch your bridge rise!





**images used from Bridges! Amazing Structures to Design, Build and Test pgs.73-74*

Materials
- hole punch
- scissors
- string
- 2 empty cereal boxes
- 1 piece of thin cardboard (about the size of the boxes)
- drinking straw cut in half
- **BLM** Lift That Bridge! Instructions

Math and Literature Vocabulary
technology
engineer
architect
environmentalist
load
dam
suspension

Unit 6, Lesson 3 — Grades 5-6

Follow-up

Math Objectives:
- Identify math in everyday situations.
- Explain and record observations using objects, words, pictures, numbers and technology.
- Make generalizations from patterns or sets of examples and non-examples.
- Justify why an answer is reasonable and explain the solution process.

Language Objectives:
- Listen to classmates and to teacher discuss and read.
- Speak, read and write vocabulary words in context.
- Brainstorm and discuss the various problems given.
- Create a chart of sorted items and explain how you decided to sort them.
- Create a list of things to do before building a skyscraper can begin.
- Justify your conclusions based on the results of your investigations.

Science Objectives:
- Demonstrate safe practices and the use of safety equipment as needed during investigations.
- Plan and implement descriptive investigations, including asking well-defined questions, making inferences, and selecting and using appropriate equipment or technology to answer the questions.
- Collect and record data by observing and measure, using descriptive words and numerals such as labeled drawing, writing, and concept maps.
- Analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured.
- Communicate valid, oral and written results supported by data
- Brainstorm and discuss the various problems given.
- Generate charts to describe the outcomes of investigations.

Divide class into groups of three-four and distribute materials. Review the activity again making sure to address any questions or concerns.

Students will follow the directions provided on BLM Lift That Bridge! - Instructions.

Document the process by taking pictures of student groups working on the project.

Unit 6, Lesson 3 — Grades 5-6

Follow-up - continued

Monitor students groups, stopping to ask thought provoking questions.

QUESTIONS

- What do you predict will happen if the cables aren't the same length?
- How is your design working?
- Do you need to make any adjustments?
- Is your span straight, level, and well supported? Why or why not?
- What steps of the design process have you gone through?
- What step of the design process are you on right now?

Take pictures of the final products built by the students.

Recursive Review
omitted

Writing Topics
Independent Writing Topic
omitted

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Materials
- 1 personal pan pizza
- 2 individual servings of juice
- 2 paper dessert plates
- 2 paper towels
- 2 plastic knives

All items listed above per partner pair

Math and Literature Vocabulary
technology
engineer
architect
environmentalist
load
dam
suspension

Unit 6, Lesson 3 — Grades 5-6

Snack Fractions

Students should wash their hands before this activity if using food items.

Math Objectives
- Use addition, subtraction, multiplication and division to solve problems involving fractions, decimals, ratios, and percents.
- Convert between fractions, decimals, and percents.
- Estimate to find solutions to problems involving fractions, decimals, and percents.

Language Objectives
- Discuss how fractions, decimals, ratios, and percents can be used to solve real-world problems.

Snack Fractions
Snack Fractions will be simple during this unit because of the extensive project design in the main lesson pieces. Students simply share and answer orally administered questions *(examples provided)*.

The Snack Fraction activities for this lesson will focus on dividing into halves. Teacher will facilitate mathematical conversations during this lesson instead of providing a record sheet to students.

Students will share pizza equally between partners and verbally answer the questions the teacher asks.

QUESTIONS
- What is the whole in this situation?
- How did you break this up into equal shares?
- Does this fraction have an easily calculated decimal equivalent?
- How can you find the decimal of this fraction?
- How can you calculate the percent?
- What would happen if one more person joined your group? Two more people? Three more people?
- What happens to the size of the slices as more people join?

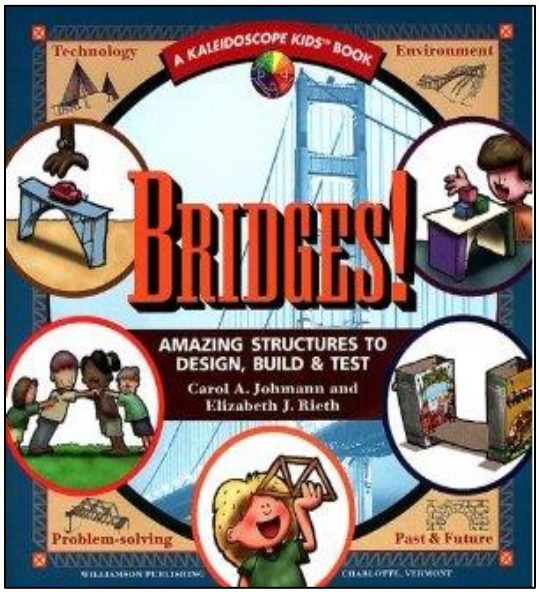
Once the activity is complete, let them enjoy their snack!

Snack Fraction Journal Writing: BLM Veggie Pizza-Snack Fractions
omitted

Objectives
Read through the math and language objectives, making sure that students understand how they accomplished each.

Unit 6 Lesson 3 – Family Fun

Dear _____,



We did another project from the book ***Bridges! Amazing Structures to Design, Build and Test*** by Carol A. Johmann and Elizabeth J Rieth.

This time our bridge moved! We researched moveable bridges across the world and this is what I learned…

_____
_____
_____
_____

Sincerely,

_____